DRAFT FINAL REPORT

Sustainable Forest Management,
Poverty Alleviation and Food Security
in Upland Communities in the Philippines
(Project PHI/01/010)

(The Revised Master Plan for Forestry Development)

October 2003

FOOD AND AGRICULTURE ORGANIZATION
OF THE UNITED NATIONS

FOREST MANAGEMENT BUREAU
DEPARTMENT OF ENVIRONMENT AND NATURAL RESOURCES

With funding support from:
UNITED NATIONS DEVELOPMENT PROGRAM
The review and revision of the 1990 Master Plan for Forestry Development was conducted primarily to reassess the situation of the forestry sector in consideration of the observed need to strengthen the institutions and the sector’s policy environment and refocus its thrusts and directions in view of the current realities and emerging trends in the field of forestry and environment, both locally and internationally. The product of this review is the Revised Master Plan for Forestry Development which is envisioned to guide the long term development of the forestry sector in the Philippines. The planning process has been carried out through participatory consultations and workshops with the relevant stakeholders of the sector particularly the DENR central and regional offices, representatives from local government units, other government agencies, donor agencies, people’s organizations, private sector, non-governmental organizations, and respected professionals in the fields of forestry, environment, natural resource economics and related fields.

The Revised Master Plan focuses on four strategic programs namely: programs on policy and institutions development, programs on watershed and forest management, programs on livelihood and poverty eradication, and programs on forest-based industries development. Among the subprograms identified, attention is centered on ten (10) priority subprograms as follows: a) policy reforms and institutions development, b) prioritization of watersheds together with integrated land use planning and forest boundary delineation, c) enhancement of management information system; information, education and communication; and research and development, d) sustainable management of residual forests and other natural forests and forest protection, e) forest area expansion through plantation development, assisted natural regenerations, and other means, f) protected area and biodiversity conservation, g) forest industries rationalization and development, h) sustainable management of grazing lands, i) full development of monitoring and evaluation system and the criteria and indicators for all forest types and management systems, and j) community-based forest management as a cross cutting strategy in all forest management systems.

The Revised Master Plan has been prepared through a funding support from the United Nations Development Program. The planning work was carried out by a team organized by the Food and Agriculture Organization of the United Nations and coordinated by the Forest Management Bureau of the Department of Environment and Natural Resources.

On behalf of the DENR, I would like to express my appreciation to all organizations and individuals who have provided and shared their experiences, cooperation and support in the formulation of this Plan.

ELISEA G. GOZUN
Secretary
Department of Environment and Natural Resources
November, 2003
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<td>CALT</td>
<td>Certificate of Ancestral Land Title</td>
</tr>
<tr>
<td>CAR</td>
<td>Cordillera Administrative Region</td>
</tr>
<tr>
<td>CARL</td>
<td>Comprehensive Agrarian Reforms Law</td>
</tr>
<tr>
<td>CARP</td>
<td>Comprehensive Agrarian Reform Program</td>
</tr>
<tr>
<td>CBD</td>
<td>Convention on Biological Diversity</td>
</tr>
<tr>
<td>CBFM</td>
<td>Community-Based Forest Management</td>
</tr>
<tr>
<td>CBM</td>
<td>Community-Based Management</td>
</tr>
<tr>
<td>CBFMA</td>
<td>Community-Based Forest Management Agreement</td>
</tr>
<tr>
<td>CBFMO</td>
<td>Community-Based Forest Management Office</td>
</tr>
<tr>
<td>CBFMS</td>
<td>Community-Based Forest Management Strategy</td>
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<td>CBFMSA</td>
<td>Community-Based Forest Management Special Account</td>
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<td>CBFRM</td>
<td>Community-Based Forest Resource Management</td>
</tr>
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<td>CBRMP</td>
<td>Community Based Resource Management Project</td>
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<td>CBO</td>
<td>Community-Based Organisation</td>
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<td>CCFS</td>
<td>Certificate of Community Forest Stewardship</td>
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<tr>
<td>CDA</td>
<td>Co-operative Development Authority</td>
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<tr>
<td>CDM</td>
<td>Clean Development Mechanism</td>
</tr>
<tr>
<td>CDMP</td>
<td>Comprehensive Development and Management Plan</td>
</tr>
<tr>
<td>CENRO</td>
<td>Community Environment and Natural Resources Office/Officer(DENR)</td>
</tr>
<tr>
<td>CEP</td>
<td>Coastal Environmental Program</td>
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<tr>
<td>CFMA</td>
<td>Community Forestry Management Agreement</td>
</tr>
<tr>
<td>CFNR</td>
<td>College of Forestry and Natural Resources</td>
</tr>
<tr>
<td>CFP</td>
<td>Community Forestry Program</td>
</tr>
<tr>
<td>CI</td>
<td>Conservation International, an NGO</td>
</tr>
<tr>
<td>CIDA</td>
<td>Canadian International Development Agency</td>
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</table>
C&I  Criteria and Indicators
CITES  Convention on International Trade in Endangered Species
CLO  Certificate of Lumber Origin
CLOA  Certificates of Land Ownership Award
CLUP  Comprehensive Land Use Plan
CMMO  Coastal and Marine Management Office
CO  Community Organization (also Certificate of Origin)
COA  Commission on Audit
CRM  Coastal Resources Management
CRMF  Community Resource Management Framework
CS  Certificate of Stewardship
CSC  Certificate of Stewardship Contract
CSD  Comprehensive Site Development
cum  cubic meter/s
cum/ha  cubic meter/s per hectare
CY  Calendar Year
DA  Department of Agriculture
DANIDA  Danish International Development Agency
DAO  Department (DENR) Administrative Order
DAR  Department of Agrarian Reform
dbh  diameter at breast height
DBM  Department of Budget and Management
DENR  Department of Environment and Natural Resources
DILG  Department of Interior and Local Government
DOST  Department of Science and Technology
DRC  Daily Rated Capacity
DTI  Department of Trade and Industry
EC  European Commission
ECC  Environmental Compliance Certificate
EcoGov  Eco-Governance Programme; A Good Governance initiative in the ENR Sectors
EIA  Environmental Impact Assessment
EMB  Environmental Management Bureau
ENFOR  Environment Forestry Program
ENR  Environment and Natural Resources
ENR-SECAL  Environment and Natural Resources Sectoral Adjustment Loan
ENRO  Environment and Natural Resources Office
EO  Executive Order
EU  European Union
ERDB  Ecosystem Research and Development Bureau
FAO  Food and Agriculture Organization of the United Nations
FASPO  Foreign Assisted and Special Programs Office
FASPs  Foreign Assisted and Special Projects
FCCC  Framework Convention on Climate Change
FDC  Forest Development Center
FLMA  Forest Land Management Agreement
FINNIDAN  Finnish International Development Agency
FLGLA  Forest Land Grazing Lease Agreement
FLGMA  Forestland Grazing Management Agreement
FLMA  Forest Land Management Agreement
FLMP  Forest Land Management Program
FLUP   Forest Land Use Plan
FMB   Forest Management Bureau
FMP   Forestry Master Plan
FMU   Forest Management Unit
FMS   Financial Management System
FOB   Free on Board
FOM   Forest Occupancy Management
FPC   Forest Planning Centre
FPIC   Free and Prior Informed Consent
FPRDI   Forest Products Research and Development Institute
FRA   Forest Resources Assessment
FRA-NCO   Forest Resources Assessment – National Coordinating Office
FSL   Forestry Sectoral Loan
FSP   Forestry Sector Project
GAA   General Appropriations Act
GDP   Gross Domestic Product
GEF   Global Environment Facility
GIS   Geographic Information System
GNP   Gross National Product
GPS   Global Positioning System
GRBS   Game Refuge and Bird Sanctuaries
GTZ   German Agency for Technical Cooperation
ha   hectare
HQ   Head Quarters
HRD   Human Resource Development
IAOP   Integrated Annual Operations Plan
IC   International Consultant
ICC   Indigenous Cultural Communities
IEC   Information, Education and Communication or Information and Education Campaign
IEE   Initial Environmental Examination
IFF   Inter-governmental Forum on Forests
IFMA   Industrial Forest Management Agreement
IFP   Industrial Forest Plantation
IP   Indigenous People
IPA   Integrated Protected Area
IPAS   Integrated Protected Area System
IPF   Intergovernmental Panel on Forests
IPRA   Indigenous People’s Rights Act
IRR   Implementing Rules and Regulations
ISF   Integrated Social Forestry
ISFP   Integrated Social Forestry Program
ITP   Industrial Tree Plantation
ITPLA   Industrial Tree Plantation Lease Agreement
ITTO   International Tropical Timber Organization
JBIC   Japan Bank for International Cooperation
KfW   Kreditanstalt fur Wiederaufbau (German Development Bank)
LAMP   Land Administration and Management Program
LGC   Local Government Code (RA 7160)
LGU   Local Government Unit
LIUCP   Low-Income Upland Community Program
<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Full Form</th>
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<tbody>
<tr>
<td>LMB</td>
<td>Land Management Bureau</td>
</tr>
<tr>
<td>LOI</td>
<td>Presidential Letter of Instruction</td>
</tr>
<tr>
<td>MADECOR</td>
<td>Mandala Agricultural Development Corporation</td>
</tr>
<tr>
<td>MBI</td>
<td>Market Based Instrument</td>
</tr>
<tr>
<td>MG</td>
<td>Memorandum Circular</td>
</tr>
<tr>
<td>MENRO</td>
<td>Municipal Environment and Natural Resources Office</td>
</tr>
<tr>
<td>MFPC</td>
<td>Multi-sectoral Forest Protection Committees</td>
</tr>
<tr>
<td>M &amp; E</td>
<td>Monitoring and Evaluation</td>
</tr>
<tr>
<td>MIS</td>
<td>Management Information System</td>
</tr>
<tr>
<td>MOA</td>
<td>Memorandum of Agreement</td>
</tr>
<tr>
<td>MPFD</td>
<td>Master Plan for Forestry Development</td>
</tr>
<tr>
<td>MSA</td>
<td>Mangrove Stewardship Agreement</td>
</tr>
<tr>
<td>MTPDP</td>
<td>Medium Term Philippine Development Plan</td>
</tr>
<tr>
<td>MWRMC</td>
<td>Municipal Watershed Resources Management Committees</td>
</tr>
<tr>
<td>NA</td>
<td>Not available</td>
</tr>
<tr>
<td>NAMRIA</td>
<td>National Mapping and Resource Information Authority</td>
</tr>
<tr>
<td>NCIP</td>
<td>National Council of Indigenous People</td>
</tr>
<tr>
<td>NCSB</td>
<td>National Statistical Coordination Board</td>
</tr>
<tr>
<td>NEDA</td>
<td>National Economic and Development Authority</td>
</tr>
<tr>
<td>NFP</td>
<td>National Forest Programme/ National Forestation Programme</td>
</tr>
<tr>
<td>NFRI</td>
<td>National Forest Resource Inventory</td>
</tr>
<tr>
<td>NGO</td>
<td>Non-Governmental Organization</td>
</tr>
<tr>
<td>NIPAS</td>
<td>National Integrated Protected Area System</td>
</tr>
<tr>
<td>NLUC</td>
<td>National Land Use Code</td>
</tr>
<tr>
<td>NPC</td>
<td>National Project Co-ordinator</td>
</tr>
<tr>
<td>NPD</td>
<td>National Project Director</td>
</tr>
<tr>
<td>NPFG</td>
<td>National Forestry Planning Group</td>
</tr>
<tr>
<td>NR</td>
<td>Natural Resources</td>
</tr>
<tr>
<td>NRM</td>
<td>Natural Resources Management</td>
</tr>
<tr>
<td>NRMP</td>
<td>Natural Resources Management Program</td>
</tr>
<tr>
<td>NSO</td>
<td>National Statistics Office</td>
</tr>
<tr>
<td>OECF</td>
<td>Overseas Economic Cooperation Fund of Japan</td>
</tr>
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<td>ODA</td>
<td>Official Development Assistance</td>
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<tr>
<td>OMFPL</td>
<td>Ordinary Minor Forest Product Licence</td>
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<td>PA</td>
<td>Protected Area</td>
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<tr>
<td>PACBRMAS</td>
<td>Protected Area Community-Based Resource Management Agreement</td>
</tr>
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<td>PAMB</td>
<td>Protected Areas Management Board</td>
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<tr>
<td>PAWB</td>
<td>Protected Areas and Wildlife Bureau of DENR</td>
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<tr>
<td>PCR</td>
<td>Project Completion Report</td>
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<td>PCARRD</td>
<td>Philippine Council for Agriculture, Forestry and Natural Resources Research and Development</td>
</tr>
<tr>
<td>PCC</td>
<td>Project Co-ordinating Committee</td>
</tr>
<tr>
<td>PCSD</td>
<td>Palawan Council for Sustainable Development</td>
</tr>
<tr>
<td>PCSD</td>
<td>Philippine Council for Sustainable Development</td>
</tr>
<tr>
<td>PD</td>
<td>Presidential Decree</td>
</tr>
<tr>
<td>PDED</td>
<td>Project Development and Evaluation Division</td>
</tr>
<tr>
<td>PEENRA</td>
<td>Philippine Environment Economic and Natural Resources Accounting System</td>
</tr>
<tr>
<td>PENRO</td>
<td>Provincial Environment and Natural Resources Office/Officer</td>
</tr>
<tr>
<td>PFA</td>
<td>Public Forest Administration</td>
</tr>
<tr>
<td>PFDA</td>
<td>Private Forest Development Agreement</td>
</tr>
<tr>
<td>Acronym</td>
<td>Full Form</td>
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<tr>
<td>---------</td>
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</tr>
<tr>
<td>TOR</td>
<td>Terms of Reference</td>
</tr>
<tr>
<td>TREES, Inc.</td>
<td>Tropical Resources for Environment and Economic Systems, Incorporated</td>
</tr>
<tr>
<td>TSI</td>
<td>Timber Stand Improvement</td>
</tr>
<tr>
<td>UN</td>
<td>United Nations</td>
</tr>
<tr>
<td>UNCED</td>
<td>United Nations Conference on Environment and Development</td>
</tr>
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<td>UNDP</td>
<td>United Nations Development Programme</td>
</tr>
<tr>
<td>UN-FCCC</td>
<td>United Nations Framework Convention on Climate Change</td>
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<tr>
<td>UNFF</td>
<td>United Nations Forum on Forests</td>
</tr>
<tr>
<td>UP</td>
<td>University of the Philippines.</td>
</tr>
<tr>
<td>UPLB</td>
<td>University of the Philippines at Los Banos.</td>
</tr>
<tr>
<td>US-AID</td>
<td>United States Agency for International Development.</td>
</tr>
<tr>
<td>USDA</td>
<td>United States Department of Agriculture</td>
</tr>
<tr>
<td>USEC</td>
<td>Undersecretary</td>
</tr>
<tr>
<td>US$</td>
<td>United States Dollar</td>
</tr>
<tr>
<td>VFA</td>
<td>Village Forestry Association (of the Republic of Korea)</td>
</tr>
<tr>
<td>VAT</td>
<td>Value Added Tax</td>
</tr>
<tr>
<td>WA</td>
<td>Wildlife Areas</td>
</tr>
<tr>
<td>WB</td>
<td>World Bank</td>
</tr>
<tr>
<td>WCED</td>
<td>World Commission on Environment and Development</td>
</tr>
<tr>
<td>WCFSD</td>
<td>World Commission on Forests and Sustainable Development</td>
</tr>
<tr>
<td>WEM</td>
<td>Watershed and Ecosystem Management</td>
</tr>
<tr>
<td>WIDA</td>
<td>Wood Industry Development Authority</td>
</tr>
<tr>
<td>WSSD</td>
<td>World Summit on Sustainable Development</td>
</tr>
<tr>
<td>WTO</td>
<td>World Trade Organisation</td>
</tr>
<tr>
<td>WEM</td>
<td>Watershed and Ecosystem Management</td>
</tr>
<tr>
<td>WFP</td>
<td>Work and Financial Plan</td>
</tr>
<tr>
<td>WSSD</td>
<td>World Summit on Sustainable Development</td>
</tr>
<tr>
<td>YEAL</td>
<td>Years Elapsed After Logging</td>
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</tbody>
</table>
EXECUTIVE SUMMARY

A. INTRODUCTION

Background

The Philippines' forestry sector is continuously declining in terms of its bio-physical, economic and environmental aspects. Such decline is largely attributed to a number of inadequate and poorly-implemented forestry policies that led to the rapid exploitation of timber from virgin forests at prices far below real market values. The proliferation of only short duration timber licenses in the past discouraged long term investments in forest development and dampened private sector initiatives. Forest destruction rose to very alarming levels while forest recovery through natural and artificial means never coped with the forest destruction rate. Furthermore, the institutions mandated to implement forest policies to address all these problems had not been equipped to fully address the situation. Meanwhile, the social settings in the uplands and forest adjacent communities continue to exert pressure on natural resources and made the tasks of conserving the forests more difficult. The very high incidence of poverty in the uplands continues to exacerbate environmental degradation problems and the country's once rich forests continue to lose their vital functions.

In response, the Philippine Government through the assistance of Asian Development Bank (ADB) and the Finnish International Development Agency (FINNIDA), formulated a 25-year Philippine Master Plan for Forestry Development (MPFD) in 1989-1990. The master-planning work was carried out jointly by DENR and a team of specialists managed by the Jaakko Poyry Oy of Finland and MADECOR of the Philippines. The MPFD was accepted and approved by the Philippine Cabinet in June, 1990. It consists of three umbrella programs and fifteen major programs designed to revitalize the Philippine Forestry Sector back to its former significant role in national development. Formulation of Regional forestry development plans ensued, and was followed by formulation of a medium term plan for 1993-1998, all of which were completed in 1992.

A 1999 UNDP fact-finding mission on preliminary review noted successes of MPFD in selected areas like people-oriented forestry. However, several major programs did not progress as projected. The DENR struggled and failed to get the needed support for the successful implementation of the Plan. The failure of the proposed bill on 'sustainable forest management' to be passed into law further kept the DENR from pursuing aggressive sustainable forest management strategies because of lack of enabling forest policy in the sector.

Finally, since the MPFD was formulated, several new developments and concerns have emerged in forestry, both in the local and international fronts. These issues now affecting forestry in the country were unforeseen at the time MPFD was formulated. Among these are the forestry and land-use implications related to climate change, adoption of criteria and indicators for sustainable forest management, and the increasing recognition of the role of forests and forestry in poverty eradication and support of sustainable livelihood, among others. The review of MPFD implementation conducted by UNDP mission also noted several weaknesses and aspects of the Plan that had become less relevant in guiding the country's forestry activities. The mission recommended the review and revision of MPFD taking into consideration the changed environment and priorities in the Philippines and other emerging trends in local and international forestry. In February, 2000, ADB hosted a forum on Philippine MPFD where an action agenda was proposed. Such agenda also called for the Government and all stakeholders to re-evaluate, revise and promote adherence to MPFD considering other emerging issues in forestry and the environment sector.
Importance of the Forestry Sector

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 pre-requisite to a sustained growth in agriculture and other industries. Besides, forest lands are the main watersheds of rivers which provide water for various uses. Soil erosion and hydrological deterioration of these watersheds caused losses in productivity and utility of infrastructures. The total off-site and on-site costs of forest degradation was estimated at P11.6 billion annually (MPFD, 1990). 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. However, the sector continue to reel from many threats to forest resources, among which are: the tremendous pressure from an increasing population in search of land to till and forest resources to use, the loss of vital watershed function and loss of biodiversity and inadequate forest development, management, and conservation efforts.

The Project

Through a proposal from the Forest Management Bureau (FMB) of the DENR, with funding support from the United Nations Development Programme, a team was formed by the Food and Agriculture Organization of the United Nations (FAO) under its Support for Policy Program Division (SPPD) to undertake review and revision of the 1990 MPFD. The Project has reviewed the MPFD implementation relative to its objectives, assessed the accomplishments along identified subsectors and identified measures to strengthen policies as well as the sector’s institutions. The Project was carried out using a five-step methodology as follows:

- Review of the objectives of the Master Plan for Forestry Development;
- Assessment of the achievements and extent of implementation of MPFD programs and effectiveness of supporting policies;
- Conduct of field programs reviews and stakeholders’ consultations;
- Policy analysis and assessment; and
- Preparation of MPFD programs and policy revisions.

The SPPD project team members worked hand-in-hand with a counterpart FMB staff. Other organizations, i.e. SEARCA and TREES, Inc., were contracted to assist and do facilitation services in the conduct of regional workshops and consultations and in the conduct of special studies related to overall assessment of forestry accomplishments under MPFD.

Below (Figure 1.1) is the overall framework for the Master Plan project implementation.

![Figure 1.1. Revised Master Plan: Framework of Analysis](image-url)
Given the situations and desired scenarios for the different forestry subsectors, revised strategic directions were formulated. This process relied significantly on the issues, comments, and suggestions raised in various papers presented during the national and regional consultations and workshops. Among the pre-identified strategic program thrusts and directions explored are as follows:

- Addressing the vicious cycle of forest degradation and upland poverty
- Enhancing watershed integrity and its capacity in sustaining supply of goods (wood, water, food, shelter, medicine, etc.) and enhancing delivery of environmental services
- Enhancing private investments, viability and economic contributions of forest-based industry
- Promoting forest science in forestry, and rationalizing forestry education and extension
- Ensuring productive participation of various stakeholders and equitable sharing of benefits
- Institutional streamlining and capacitation

The overall planning framework/strategy was anchored on the watershed and ecosystem management approach as overarching principle in forest resources management. Among the considerations emphasized under this framework is the adoption of a management planning tool which has the flexibility to incorporate unique features and other exigencies of the watershed and the institutions managing them. Basic to this is a comprehensive resource assessment at all field level offices for planning and management purposes and adoption of practical operational systems for putting every ha of forest land into definitive management system (under SDUs), each with accountable land manager, equipped with the proper knowledge and tools for effective resources management.

General Assessment of 1990 MPFD Implementation

Overall forestry sector condition

The Philippine forestry sector is in the decline in terms of recorded contributions to the national economy and in environmental and physical terms. The country’s once rich forests are now gone or in various stage of degradation (Table 1.1). Such decline was attributed to a number of inadequate and poorly-implemented forestry policies which led to the rapid exploitation of timber from virgin forests at prices far below real market values. Under the implementation of the Revised Forestry Code of the Philippines (PD 705) which was passed in 1975, the sector continued to decline. The proliferation of only short duration timber licenses in the past discouraged long term investments in forest development and environmentally-sound forest management practices. The unstable policy environment also dampened private sector investments in forestry. Figure 1.2 shows the problem tree for the sector embodying the chain of events that leads to its decline.

<table>
<thead>
<tr>
<th>YEAR</th>
<th>FOREST COVER</th>
<th>% OF TOTAL AREA</th>
</tr>
</thead>
<tbody>
<tr>
<td>1575</td>
<td>27.5</td>
<td>92.0</td>
</tr>
<tr>
<td>1863</td>
<td>20.9</td>
<td>70.0</td>
</tr>
<tr>
<td>1920</td>
<td>18.9</td>
<td>64.0</td>
</tr>
<tr>
<td>1934</td>
<td>17.8</td>
<td>57.3</td>
</tr>
<tr>
<td>1970</td>
<td>10.9</td>
<td>36.3</td>
</tr>
<tr>
<td>1980</td>
<td>7.4</td>
<td>24.7</td>
</tr>
<tr>
<td>1990</td>
<td>6.7</td>
<td>20.7</td>
</tr>
<tr>
<td>2001</td>
<td>5.4</td>
<td>18.0</td>
</tr>
</tbody>
</table>
Forest destruction rose to very alarming levels while forest recovery (Table 1.2) through natural and artificial means never coped with the destruction rate. DENR (2002) has estimated an average net loss of 130,000 ha of forests annually during the 1990s. Furthermore, the institutions mandated to implement forest policies to address all these problems had not been equipped to fully address the situation. The failure of the efforts over the past few decades to halt the vicious cycle of deforestation, forest degradation and upland poverty has primarily been the result of inadequacies in institutional aspects particularly in policy implementation due to weaknesses in the structure of forestry sector organizations.

Meanwhile, the social settings in the uplands and forest adjacent communities continue to exert pressure on natural resources and made the task of conserving the forests more difficult. The very high incidence of poverty in the uplands continues to exacerbate environmental degradation problems.

Table 1.2. Area reforested by the government and the private sectors (in 000 ha).

<table>
<thead>
<tr>
<th>Year</th>
<th>Government</th>
<th>Non-Government</th>
<th>Grand Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>2001</td>
<td>26,524</td>
<td>4,920</td>
<td>31,444</td>
</tr>
<tr>
<td>2000</td>
<td>21,740</td>
<td>5,893</td>
<td>27,633</td>
</tr>
<tr>
<td>1999</td>
<td>31,184</td>
<td>10,983</td>
<td>42,167</td>
</tr>
<tr>
<td>1998</td>
<td>33,219</td>
<td>9,149</td>
<td>42,368</td>
</tr>
<tr>
<td>1997</td>
<td>49,301</td>
<td>16,936</td>
<td>66,237</td>
</tr>
<tr>
<td>1996</td>
<td>18,869</td>
<td>27,227</td>
<td>46,096</td>
</tr>
<tr>
<td>1995</td>
<td>21,841</td>
<td>43,392</td>
<td>65,233</td>
</tr>
<tr>
<td>1994</td>
<td>18,032</td>
<td>31,519</td>
<td>49,551</td>
</tr>
<tr>
<td>1993</td>
<td>6,347</td>
<td>12,864</td>
<td>19,211</td>
</tr>
<tr>
<td>1992</td>
<td>24,304</td>
<td>16,289</td>
<td>40,593</td>
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<tr>
<td>1991</td>
<td>73,682</td>
<td>19,437</td>
<td>93,039</td>
</tr>
<tr>
<td>1990</td>
<td>153,949</td>
<td>37,714</td>
<td>191,663</td>
</tr>
<tr>
<td>1989</td>
<td>89,452</td>
<td>41,952</td>
<td>131,404</td>
</tr>
<tr>
<td>1988</td>
<td>31,226</td>
<td>32,957</td>
<td>64,183</td>
</tr>
<tr>
<td>1987</td>
<td>26,843</td>
<td>10,966</td>
<td>37,809</td>
</tr>
<tr>
<td>Average</td>
<td>41,396</td>
<td>21,481</td>
<td>63,377</td>
</tr>
</tbody>
</table>

Source: FMB.
At the same time, different forest stakeholders are clamoring for more involved participation in the planning, management and utilization of forest resources. The playing field now becomes the arena of many players, each wanting to say his piece in the proper management of forests, through participatory approaches. Such is a consequence of the lost of confidence to traditional forest managers and the increasing awareness on the importance of forests to the very survival of the nation. The importance of the roles of institutions is now becoming apparent and needs important attention and considerations in any policy, planning and program implementation activities designed to bring back the sector into more responsive and significant position.

**Accomplishments under 1990 MPFD**

One of the most visible accomplishments of the 1990 MPFD is the CBFM project, which is under the People Oriented Forestry Program. Based on the program targets, there is supposed to be 3.4 M ha of forest lands under tenure until the year 2000. At present, around 5.7 mil ha are under CBFM (Table 1.3). CBFM is also another program effective in closing many open access areas. Another area where the 1990 MPFD overshot its target is in the area of Protected Area and Biodiversity Conservation where around 325,000 ha were to be established under buffer zones and protected area comparing to the accomplishment of 3.2 million ha under the National Integrated Protected Area System.

Similarly, there are many positive developments under the program of Soil Conservation and Watershed Management, as there are several key accomplishments under this subsector. For example, the sector adopted the watershed and ecosystem management approach (through DAO 99-01), as the overarching principle in forest management. WEM espouses the adoption of holistic, multiple-use and sustainable management of resources within watersheds. It also involves adoption of planning tools and management strategies that promote ecology among people, resources and environment; adoption of a management system that has the flexibility to safeguard the integrity of watershed functions and system that endeavors to promote the welfare of stakeholders affected by them. Moreover, the DENR endeavored to implement several projects, e.g., FSP, ENR-Secal Project, NRMP with PSIWRM and Guidelines for Watershed Management and Development, etc., which pursue soil conservation and watershed management in the purview of participatory and multisectoral involvement of different watershed stakeholders.

However, in terms of other program targets, all other programs were under-achieved in terms of physical targets. For example, there was a plan to establish 1.3 million ha of forest plantations between 1991-2000. The sector achieved around 0.68 million ha during the period for a 50% accomplishment. However, the quality of these reported plantations is far from satisfactory because of the low survival rate of government initiated plantations. Another target under institutional development is the reduction of forestry schools offering forestry and allied courses from then 27 schools to 14 strategically located schools to arrest the declining quality of forestry graduates. Instead, there are now 52 forestry schools offering forestry resulting to low quality of turnouts. Table 1.3 shows a summary matrix of target and accomplishments under the 1990 MPFD implementation.
Table 1.3. Summary of targets and accomplishments under the 1990 MPFD.

<table>
<thead>
<tr>
<th>TARGET (1990-2000)</th>
<th>ACCOMPLISHMENTS</th>
<th>REMARKS</th>
</tr>
</thead>
<tbody>
<tr>
<td>I. Man and Environment</td>
<td>4.4 mil ha tenured, 1.3 mil ha in process</td>
<td>Accomplished under CBFM program</td>
</tr>
<tr>
<td>3.4 mil ha under tenure under different POFP programs</td>
<td>around 14,000</td>
<td>developed under CBFM-JBIC</td>
</tr>
<tr>
<td>13,000 ha ANR projects</td>
<td>over 480 parks already established in MM including those inside private subd.</td>
<td>Includes those established before 1990.</td>
</tr>
<tr>
<td>60 mini forest parks established</td>
<td>No records except for seedlings planted</td>
<td>Many of those planted have died, or replaced, removed or destroyed due to new infrastructures like road widening</td>
</tr>
<tr>
<td>780 km of greenbelts/roadside planting</td>
<td>The rate now is around 80,000 ha/year although there are no official estimates from FMB yet</td>
<td></td>
</tr>
<tr>
<td>Deforestation to drop to 26,000 ha annually by 2000</td>
<td>2,200 brushland as of 2000</td>
<td>brushlands are the subject of current developments under FSP</td>
</tr>
<tr>
<td>II. Forest Management and Products Development Programs</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1,673,000 ha of PA forest estate under dept forest established by 1995</td>
<td>864,000 ha declared</td>
<td>declared under RA 7586, but not yet delineated</td>
</tr>
<tr>
<td>Logging banned in old growth forests</td>
<td>Logging ban effected</td>
<td>Through RA 7586</td>
</tr>
<tr>
<td>2.5 M ha of permanent production residual forest</td>
<td>Production forest not yet delineated</td>
<td>Lack of funds to implement delineation, change of priorities</td>
</tr>
<tr>
<td>1.3 M ha of forest plantations</td>
<td>600,000 accomplished</td>
<td>Mostly loan driven, no records on basic plantation information</td>
</tr>
<tr>
<td>44,000 ha of mangrove plantations</td>
<td>around 15,000 ha developed under FSP</td>
<td>12,000 developed under CBFM-JBIC</td>
</tr>
<tr>
<td>40,000 ha of pine plantations</td>
<td>1,700 accomplished</td>
<td>under CBFM-JBIC</td>
</tr>
<tr>
<td>95,000 ha of rattan plantation</td>
<td>11,959 ha established</td>
<td>under FSP I &amp; II</td>
</tr>
<tr>
<td>80,000 ha improved range mgt</td>
<td>none so far recorded</td>
<td>No unit at regional level to handle this.</td>
</tr>
<tr>
<td>Favorable climate and policy environment for wood based industries</td>
<td>The industry still clamors for policy reforms, e.g., conversion of expiring/former TLAs to IFMA, full deregulation of planted trees, delineation of production and protection forest, rationalization of the industry, etc.</td>
<td>There is already full deregulation of planted trees in private lands in Mindanao, Rationalization studies has been started, etc.</td>
</tr>
<tr>
<td>A rationalized wood based industry</td>
<td>No concrete accomplishments yet</td>
<td>Still under study by FMB, no policy yet</td>
</tr>
<tr>
<td>Establishment of Timber Industry</td>
<td>Timber Industry Board not yet established</td>
<td>There are proposals to pursue this.</td>
</tr>
<tr>
<td>40 sawmills retooled</td>
<td>No records</td>
<td></td>
</tr>
<tr>
<td>10 plywood mills retooled</td>
<td>No records</td>
<td></td>
</tr>
<tr>
<td>50 community sawmills</td>
<td>around 15 POs with approved sawmills?</td>
<td>No records at FMB</td>
</tr>
<tr>
<td>III. Institutional Development Programs</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Enactment of SFMA before 1992</td>
<td>Not yet enacted</td>
<td></td>
</tr>
<tr>
<td>Reduction of Forestry Schools from 27 to 14</td>
<td>Additional 25 forestry schools established, low quality of turnouts</td>
<td>No standards, no regulations</td>
</tr>
<tr>
<td>13 Reg’l Training Centers established</td>
<td>11 RTC established</td>
<td>all needing renovation</td>
</tr>
<tr>
<td>70 Prov’l Training Centers established</td>
<td>none established</td>
<td></td>
</tr>
</tbody>
</table>
**Issues/problems/constraints**

Among the major issues, problems and constraints identified by the team relative to the implementation of 1990 MPFD are as follows:

- **Policies and institutional arrangements**
  - inadequacies of forestry sector policies; no updated forest policy to guide the sector;
  - inadequacies of legal instruments, weaknesses of organizational structure of public forest administration and management;
  - no enabling policy to adopt the 1990 MPFD, the 1990 National MPFD and 1992 Regional MPFD are not being consulted in the conduct of regional planning and budgeting, non-implementation of DAO No. 23, Series of 1992 which is supposed to institutionalize implementation of 1990 MPFD through the National Forestry Planning Group (NPFG) with Regional and field level counterparts
  - confusions in land tenure and disorder in landuse;
  - deficiencies of human resource development;
  - lack of intersectoral co-ordination in addressing crosscutting issues.

- **Program implementation problems**
  - inadequacies of planning and programming system;
  - funding uncertainties, lack of funds to implement various sectoral programs including MPFD components
  - deficiencies in implementing people-oriented (participatory) forestry programmes;

- **R & D, Forest Utilization and Technology problems**
  - unscientific management of natural forest resource;
  - undefined areas of protection and production forests
  - wasteful forest utilization and inadequate value addition;
  - neglect of non-wood forest products (NWFPs);
  - weaknesses of R & D and forest extension;
  - serious lapses in plantation development (starting from site selection, seed procurement, nursery management, plantation establishment and management, harvesting, and even lapses in the purpose by which a forest plantation is established);

- **Weak IEC and Training**

- **Lack of a credible system of M&E, current systems not fully utilized by decision makers**;

- **Cross cutting issues**
  - CBFM, as a cross-cutting strategy to rehabilitate and manage all forest lands and resources, has many things to patch up and build up from;
  - lack of boundary delineation on the ground;
  - deficiencies in conservation, protection and watershed rehabilitation;
  - lack of a system of natural resources accounting;
  - lack of system for C&I and forest certification.

Underlying all the problems/constraints/issues listed above, is the absence of real awareness and commitment on the part of decision markers. Awareness creation is a matter of good information and communication, along with public education on the economic and ecological significance forestry.

**Potentials of the Sector**

In spite of all the constraints being faced, forestry in Philippines has considerable potentials for contributing to the development of the country – economically and ecologically. Among the major potentials identified are as follows:

- putting all forest areas under appropriate forest management systems that seek to obtain optimum economic and environmental benefits for forest communities, other stakeholders, and the society in general;
• expanding the area under forest cover through plantation establishment, enrichment planting and assisted natural regeneration;
• improving the quality of current natural forest stands through timber stand improvement and protection from man-made destructions, and pests and diseases;
• enhancing access to residual forests (through legally-allowed modalities) within production forest areas to improve wood supply position and manage the same in sustainable manner;
• tapping available private lands for forest plantations as demonstrated in CARAGA Region;
• enhancing forest productivity through multiple-use management and improved technology, minimal or waste-free harvesting/high utilization recovery and increased forest production without risking environmental/ecological values
• revitalizing the forest-based industries through rationalization and appropriate incentives, improved primary and down-stream processing, new product development
• developing of non-wood forest products (e.g., herbal products, agroforestry ventures);
• appropriate and rational management of protected areas and buffer zones;
• benefiting from forest biodiversity protection and management;
• promoting of forest-based recreation and eco-tourism;
• increasing overall direct benefits from the forest through proper planning for forest management and conservation.

Strengths of the Sector

The country also has several significant strengths which are important and relevant in supporting sustained development of forestry sector. These are significant factors which will contribute to the growth of the forestry sector, if adequately backed by appropriate policies and institutional mechanisms. Among these are:

• A tradition and history of forest management which dates back from Spanish Regime;
• Existence of executive imprimaturs and operational models for productive DENR-LGU-Other stakeholders participation (DENR-LGU Joint MC, 2003-01)
• 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, and under congenial conditions;
• Philippines has an array of laws, rules and regulations, which can be modified/amended to suit the chosen developmental path for forestry;
• Existence of institutions for research and education which can be strengthened suitably;
• Existence of supporting institutions outside the forestry sector, such as the universities and centres of science and technology, fruitful collaboration can be developed with them;
• Availability of a fair amount of science and technology related to forestry 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 integrated 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;
• Existence of experienced NGOs involved in supporting grass-roots organizations and people’s participation through group formation, provision of training, and promoting afforestation and environmental conservation;
• Availability of traditional knowledge on the uses of NWFPs, as well as artisanal/handicraft skills, which are yet to be adequately explored and utilized; this is also an area where rural women can increasingly participate;
Existence of hard working labor force as valuable resource for providing reasonably-priced labor. This is a strength, in the short and medium-term which can enable Philippines to compete in international markets for processed products e.g. furniture, rattan and bamboo products, consumer articles based on NWFPs and handicrafts; Also, the constant efforts in facing the problems/constraints/issues (irrespective of their nature and impacts) have helped to provide certain useful experiences to the sector.

B. THE REVISED FORESTRY MASTER PLAN FOR FORESTRY DEVELOPMENT

Scenarios For The Sector

The new outlook

It was necessary to formulate a new outlook for the sector. The new outlook embodied considerations for a combination of outlooks for landuse, productivity, demand, supply, human resource, policy and institutional changes. Past trends and current situation provided valuable inputs for outlook formulation relating to different subsectors of forestry.

A series of projections were made on the future production of goods and services based on projections of several interacting elements of forestry such as forestland (area), technology/productivity, human resources, demand/consumption pattern and others. An important aspect of outlook analysis in forestry is supply-demand balancing. Policies relating to several factors influence both demand and supply were projections had been made. Since supply sources will undergo considerable changes, supplies should increasingly be obtained from high-yielding forest plantations. The natural forests will then be considered mainly for their environmental/ecological values. Production of wood from natural forests shall be considered in cases when sector is assured that such activity is sustainable and appropriate management systems are in place.

The integrated wood balance model

A substudy on the integrated wood balance model was conducted primarily to augment outlook analysis. A complementary effort was also made under the section on forest-based industries basically to analyze demand of wood and other raw materials by the housing and furniture industry. Among the findings in this substudy are as follows:

- Sustainable management of natural forests allowing sustainable access to harvest timber from residual forests would help attain self-sufficiency in wood.

Statistics show that even without legal logging from natural forests, forest destruction continue to happen. Total area of natural forests subjected to legal harvests by legitimate TLAs average only around 5,000 ha annually during the last 10 years. Yet, forest destruction is still estimated at around a hundred thousand hectares or so annually. Thus, most forest conversions/destinations happen outside legitimate logging areas. Putting all residual forests into sustainable management would reap tremendous benefits for the society, both in economic and environmental terms.

This national wood balance study shows that with enough safeguards, a sustainable harvest from residual forests (within production forest zones) can be afforded providing enough wood that would eliminate a major bulk of importation. One of the key safeguards would be the strict protection of residual forests (and all forest stands for that matter) to prevent their conversion into non-sustainable non-forest uses. Even without legal logging, residual forests are still being lost due to population pressure.
Developing forest disposition models and implementation of JV, CP, PS is necessary in the sustainable management of residual forests

As the traditional forest licensing system has been outmoded and/or outlawed under the 1987 Philippine Constitution, other modes of forest resources utilization like direct production by the State, joint venture (JV), co-production (CP), and production sharing (PS) must be developed and implemented along the idea of improving legal access to forest resources. It is foreseen that with the active facilitation of the government in the development and management of forest resources, all open access areas will be developed and the rate of forest loss would be significantly diminished.

More focused plantation development and plantation renewal would greatly help in realizing wood sufficiency

There is a world of difference between plantation development for purposes of forest rehabilitation and plantation development for commercial timber production. The former requires management regimes which would enhance the protective and ecological values of plantations and of the forests over time, while the latter would require management regimes which would enhance the commercial value of the product over a specific rotation. Nevertheless, both require careful planning and execution starting from choice of species, seed selections, nursery operations, site preparations, outplanting, silvicultural treatments and subsequent management interventions; in order to attain optimum benefits for intended beneficiaries. Thus, plantation managers must be aware and equipped with the necessary skills in tending the plantations to attain its desired outcome.

Based on the analysis, the country need not plant vast areas of land for timber plantation in order to satisfy plantation wood demand. Over the next twelve years, it would need only around 460,000 hectares to satisfy plantation wood demand with plenty to spare for the export demand. Many regions of the country has comparative advantage with regards to attaining high plantation yield. The government must concentrate on these regions to attain economic efficiency. Some simple requirements, however, are needed to sustain positive wood balance. These are protection and improvement of existing plantations; improve efficiency in plantation wood utilization; and aggressive renewal of harvested plantation areas.

Rationalization of wood processing plants, an important component on Forest Based Industries rationalization

Many wood processing plants in the country are not appropriate anymore, efficiency or location-wise. There is proliferation of some plants in some areas while wood producers in other areas need to transport their logs over long distances in order to market or process them. Processing equipment are becoming obsolete due to the changing dimensions of raw materials and the environmental demand to be efficient is becoming louder. Thus, there is a need to rationalize the wood processing plants in the country.

Research and Development has a great role to play

The quest for improvement in production efficiency and product quality must be a continuing concern of the sector. One of the major concerns of forest based industries is how can plantation timber fit in the many raw material needs of the industry. Apparently, one of the most common plantation woods being produced in the country, which is glmelina, does not pass the basic standards of the of high-end furniture industry, for example, in terms wood quality, and seasoning and grain properties. Moreover, many management prescriptions in the natural forests (e.g., AAC, cutting cycle, silvicultural treatments, etc.) are ought to be re-examined in view of the changing
dimensions of raw materials, the social settings in which they are located and environmental demands of the larger society which affect many forest policy decisions.

The Forestry Sector Vision and Objectives

A synthesis of the various subsectoral visions revealed some common aspirations among the stakeholders. Among these are the common desire to sustainably manage the watershed and forest resources in a participatory manner for the benefit of the society. There is also the desire to be globally competitive in the forest-based industries particularly in the aspects of forest plantations and forest utilization. Another common vision is the provision of sustainable supply of goods and services to industries (whether corporate or community-based) for the upliftment of the economic welfare of upland communities. From the above visions, a common vision for the sector has been drawn as follows:

Forestry Sector Vision: A sustainably managed watershed and forest resources providing environmental and economic benefits to society with globally competitive industries contributing to the national economy and upliftment of upland communities’ welfare.

Among the general objectives formulated to pursue this vision are as follows:

- To sustainably manage the watershed/forest by capable institutions with active participation of empowered stakeholders living in harmony with nature
- To rationalize forest based industries with sustainable sources of raw materials, producing competitive-market products, and actively promoting the well being of workers and people in affected communities
- To provide globally competitive and excellent forestry education and training in forestry;
- To enhance protective and biodiversity values of forests;
- To improve the quality of life of upland communities actively participating in sustainable forest management thru CBFM.
- To enhance and improve decision making processes through adoption of improved MIS, a fully relevant M & E, continuing forest resources assessment, forest resources accounting, criteria and indicator and forest certification, etc.
- To enhance forestry institutions effectiveness, efficiency and competence in forest administration, forest conservation and management, forest protection, forestry research and forestry extension;
- To enhance policy situation that would endeavor to provide the right environment for sustainable forest management.

Strategic Targets

Among the strategic targets envisioned to set the sector in the right track are as follows:

- A fully responsive and capable PFA (public forest administration) within 10 years
- Forestry and related policies harmonized within 5 years
- Poverty in the uplands minimized to half within 15 years
- All forestland boundaries defined and marked, production and protection forests identified, surveyed and segregated within 10 years
- All forest lands under sustainable management and capable managers, all open access areas closed within 12 years
- A healthy, vigorous and responsible forest-based industries within 5 years
- Productive collaboration among DENR, LGUs and other watershed stakeholders, a responsible community of forest stakeholders participating in forestry development and management within 5 years
- All Regions starting to implement sustainable forestry within 1-5 years
• Sustainable production of clean water from watersheds, 150 watersheds prioritized within 2 years, all priority watersheds with integrated plans and management body within 5 years
• 1.5 million of residual forests under sustainable management, self sufficiency in wood 10 years,
• Permanent grazing land of at least 300,000 ha intensively and sustainably managed by 2010 onwards
• 460,000 ha of commercial forest plantations established within appropriate areas including CBFM projects, maintained and renewed within 12 years

Programs and Actions

Proposed policy and legislations

• A comprehensive and legislated national forestry policy, harmonized with other relevant policies on land, water, decentralization, rights of indigenous people and so on;
• A fully harmonised set of laws, rules, and regulations in the form of a Forestry Manual; Legislation of the Revised MPFD, adoption by Philippine Cabinet and NEDA;
• Legislation of a PFA as a line agency, reorientation of its function as: firstly, a land management agency and secondly, a forest resource management agency;
• Legislation of CBFM Special Account
• Creation of a National Council on Sustainable Forestry
• Creation of Forest Industries Development Board to oversee rationalization and development of FBI,
• Separation of authority and enterprise function of PFA, creation of National Forestry Board to oversee enterprise functions in forestry

Strategic priority programs

Among the many programs recommended in the various consultations and workshops, the following programs were prioritized as follows:

1) Policy Reforms and Institutions Development
   - harmonization of forest other policies affecting the sector
   - retrofitting the PFA as a line agency, and as: firstly, a land management agency and secondly, a forest resources management agency, separation of the authority and enterprise functions of the PFA
   - capacititation of forestry institutions, institutional reforms
   - National Council for Sustainable Forestry (NCSF)
2) Prioritization/watershed integrated land use planning simultaneous with forest boundary delineation
3) MIS, IEC and R & D enhancement
4) Sustainable management of residual forests, other natural forests, arresting forest destruction
5) Forest area expansion through plantation development, ANR, other means
6) Protected area and biodiversity conservation
7) Forest industries rationalization and development
8) Sustainable management of grazing lands
9) Full development of M & E and C & I system for all forest types and management systems
10) CBFM as a cross cutting strategy in all forest management systems
    - enhancement of CBFM implementation
    - CBFM expansion, strengthening and expansion of existing sites, identification of new sites
C. STRATEGIC PROGRAMS IMPACT ANALYSIS

Business as Usual

The stakeholders in the sector are now becoming aware and vigilant about the fate of forestry in the country. There were already many assessments conducted and recommendations forwarded by many parallel efforts. The Review and Revision of the Master Plan for Forestry Development Project only validated what have been forwarded and extensively discussed in various fora and professional gatherings. Nevertheless, the Project endeavored to provide the strategic focus by which the sector could concentrate to make some successes. Without the Revised Master Plan, the sector would continuously be confronted by the same issues and problems already known to exist a long time ago.

Firstly, forestry institutions would continue to be ineffective in addressing the sector's problems. It would continue to operate under weak policies and ill-equipped human resources. Nevertheless, it will continue to move into the path of sustainable forestry with the implementation of initiatives pragmatically designed to address current problems. However, it will still be saddled by the same issues and problems identified in this Project. Some of these are:

- forestlands will continue to be encroached, forest boundaries unrespected;
- continuous decimation of residual dipterocarp forest, watersheds will continue to be degraded and forests converted to other land uses;
- private investments in forestry will continue in trickles; and
- intersectoral linkages and cooperation would be hard to achieve

Secondly, poverty in the uplands would continue to become a problem in forest conservation. Population would exert more pressure on forest resources because of lack of employment opportunities. The sector may be caught flatfooted by the irreversible impacts of exploding population in the uplands.

Thirdly, many watersheds will continue to lose their vital functions. Alarmed stakeholders will continue to find ways in solving the problems. Some groups will be commissioned to continue to evaluate and assess the situation. Sooner or later, they will find the same issues and problems, and will probably recommend the same solutions as identified elsewhere in this paper.

Lastly, with the sector's continuing decline, it would realize the need for some plans and programs and would find efforts to have one. Hence, it would resort to the previous assessments conducted and try to reconfigure earlier plans. Eventually, the government and the sector itself would have the political will and the guts to implement the plans, although at a much later period. By this time, the sector is almost hitting rock bottom, where it is more difficult to make a reversal.

With the Revised Master Plan

The priority programs of the Revised Master Plan are so designed to have a snowballing effect. Hence, it addresses the more critical problem first so that other programs may soon be facilitated. Among the expected impacts of priority programs are as follows:

Policy reforms and institutions development

Harmonization of forest and other policies affecting the sector would eliminate flashpoints that spur conflicts among government agencies dealing with the same clientele. This would also facilitate convergence of many initiatives by the different government agencies and sectors resulting to formulation of platforms for long term coordination among agencies and stakeholders. Retrofitting the PFA as a line agency, and reorienting its main function as first: a forest land management agency and second, a forest resources management authority, would respond appropriately to focusing government efforts as facilitator
of development and operationalizing the long term goal of putting every hectare of forest lands under sustainable management unit. The separation of the authority and enterprise functions of the PFA would promote efficiency in forestry operations. The capacitation of forestry institutions would be facilitated where conflict in functions can be minimized or eliminated.

On the other hand, the creation of the National Council for Sustainable Forestry (NCSF), a coordinative body, would facilitate coordination among agencies whose concerns are influenced or affected by what is happening in watersheds; e.g., Department of Agriculture with their AFMA, Department of Agrarian reform with the CARP, etc.

**Prioritization/watershed integrated land use planning simultaneous with forest boundary delineation**

Prioritization of watershed for integrated landuse planning purposes simultaneous with forest boundary delineation would start the process on determining what are the forest areas needed for protection purposes and what are needed for other purposes. Such activities are really the critical start of sustainable forest management where the use for forest lands are determined based on criteria that would best serve the society in an optimum manner. This would allow the watershed/forest managers and other watershed/forest users realize the many and interrelated functions of watershed.

This set of programs would also provide sustainable production of water for domestic, irrigation, power generation and other industrial uses at the same time affording the stakeholders determine and operationalize other beneficial options in the use of watersheds. The ultimate impact would be the ensurance of long term health of the watersheds.

**MIS, IEC and R & D enhancement**

Full support in the enhancement and development of these support programs would create an information highway where the communities and other watershed/forest managers would have easy access to information for improvement of their management decisions and adoption of mature and tested technologies by field practitioners. A good MIS would make a DENR Regional Office more investment-friendly by minimizing the cost of obtaining information for investment purposes. Availability of up-to-date technology would promote economic efficiency in forest management. This program would also afford forest managers anchor their decisions on management tools and information based on science.

**Sustainable management of residual forests, other natural forests, arresting forest destruction**

This program would contribute much to poverty alleviation in the uplands by creation of employment opportunities in the uplands. This strategy would minimize conversion of natural forests into other non-forest landuses. This would help restore order in the management of residual forests where currently, 36,000 ha are lost annually due to conversion. Likewise, this would help attain self sufficiency in wood and other forest products.

**Forest area expansion through plantation development, ANR, other means**

Establishment of forest plantations is one of the visible means of employing people. However, employment in this type of endeavor is usually intermittent. By having forest plantations at the right places and being intensively managed for commercial production would provide continuous source of employment. The process of establishing, tending, harvesting, processing, marketing and renewal of plantations would be a continuous and deliberate cycle addressing poverty, wood sufficiency, illegal practices in affected areas.

On the other hand, expansion of other forest areas for rehabilitation and restoration purposes through establishment of indigenous forest plantations would improve the health of the watersheds. This would also impact on the conservation of biodiversity.
Protected area and biodiversity conservation programs

With the current initiatives on the protected area subsector and the proposed programs under the revised Master Plan, it is envisioned to have a perpetual existence of biological and physical diversities in a system of protected areas and such other important biological components of the environment sustainably managed for the benefit of mankind. The program impacts would be a secure and healthy PA system managed by well-informed and empowered stakeholders supported by the citizenry and providing sustainable benefits and enjoyment to society.

Forest industries rationalization and development

Rationalization and development of forest industries would afford the nation to see the economic contribution of forests. This would transform the forest-based industries into globally competitive firms with environmentally-sound forest management platforms significantly contributing to the national economy and helping address poverty alleviation in their areas of operations and vicinities.

Sustainable management of grazing lands

Implementation of programs on grazing would improve benefits from such areas which are minimal at present. This program is designed to make grazing lands as sustainable source of health and wealth for the benefit of Filipinos. This will also enhance the improvement of the carrying capacity and productivity of grazing lands through improved forage and pasture grasses, improve livestock production through proper management practices and breeding technology and provide security of tenure and incentives to grazing land managers to improve their management operations over the long term.

Full development of M & E and C & I system for all forest types and management systems

Full development of M & E and communications systems as well as C & I as a management tools would improve utility of information and enhance horizontal and vertical flow of communications. This would also impact on the improvement of MIS and IEC. As a complementary tool, C & I would help prepare forest managers and users realize the impacts of management decisions on the health of the forests. C & I system would help transform local forest management systems produce globally competitive products from sustainably managed forests. This also preparatory to forest certification, a necessary tool in the full implementation of SFM.

CBFM as a cross cutting strategy in forest management systems

Enhancement of CBFM implementation would put into the right track many CBFM projects where POs became inactive due to various reasons or another. This is the bridge program where the current lack of support rendered many POs disillusionsed with the program. This is expected to activate many POs and sustain interest among the members. Active participation of majority of members in livelihood and enterprise development would contribute to the poverty alleviation in the uplands.

On the other hand, CBFM expansion through strengthening and expansion of existing sites, and identification and implementation of new sites close many open access areas and likewise put them under formal management systems that would ensure sustainability of resources. Serious implementation of development activities geared towards resource generation (e.g., forest plantations, agroforestry, livelihood projects, etc.) would draw the attention of forest communities from unsustainable practices towards sustainable employment sources.
D. REVISED MASTER PLAN IMPLEMENTATION

Strategic Institutional Actions

Upon formal acceptance of the Revised Master Plan by the DENR Secretary, it would be strategic that the same Plan be formally approved by the Philippine Cabinet. This would render legitimacy to the Plan as well as encourage the sector who prepared this Plan. At this level, legal adoption of this Plan through legislative actions would shield it from political changes in the country and make it stable.

The top 10 priority programs has been identified based on their criticalness in putting order in the sector. Their immediate implementation is envisioned to catalyse positive chain reaction to important set of conditions for sustainable forestry to take place. A detailed action plan for these top 10 priority programs must ensue immediately upon formal acceptance of the Revised Master Plan. Timing is critical as important programs need to be included in the 2005 budget cycle. Among the critical activities to be included in the action programs are listed in Section 6.3. In the meantime, the PFA must conduct IEC for the plan. Presentation of the plan to donor agencies would really help.

This Plan shall be implemented by the sector. The DENR is the focal agency in helping orchestrate most of the activities in carrying out the programs. Acceptance of the plan by other sectors of society, and by different forestry subsectors and stakeholders who, by one reason or another, were not able to participate in its formulation, is also a paramount concern for its successful implementation.

The implementation of the Revised Master Plan would involve not only DENR regional offices but also require involved collaboration of different stakeholders. Thus, opportunities for productive collaboration must be explored. A key activity to follow this formulation of the forestry sector plan at the national level is the realignment of regional plans to the priority programs set at the national level. Current regional initiatives already aligned with the Plan shall be continued and enhanced. Some Regions have unique characteristics and conditions which may reinforce or impinge on the implementation of top 10 priority programs identified in the national level, hence, formulation of regional plans shall dwell on regional settings, their strength and potentials, to realize the goals of the sector in their regions.

It would be important to note that there are many other programs identified in Section 4 of this report concerning different forestry subsectors that were not included in the national priority programs. These programs are not prioritised because they are not critical in the short term. However, they are part of the long term plan to sustain the sector. It will be useful to make careful considerations of these as some subsectors or regions may find such other programs relevant to their conditions. However, still basic to successful implementation of any plan is to capacitate the institutions mandated to implement the plans.

Financing strategies

It is necessary to dramatically increase investment in forestry and forest-based industry sectors to meet the needs of the future. In that, the non-government sectors will have an important part to play. Currently, most of the investment funds for government programmes are obtained from government revenue sources and as loans and grants from external development agencies. Mobilisation of investment funds locally is very important in meeting at least part of the future investment needs. And, in order to attract private sector participation, it is necessary to make investment profiles of suitable projects available, with relevant information and analysis.

Financing of forestry program is dependent essentially on public sources (including external assistance) whereas forest products development is mostly supported by private finance. Both public and private financing are needed in the implementation of the revised Master Plan. To support regular flow of funds, and financial autonomy, several countries have developed innovative mechanisms such as forest funds, private ledger account and special revolving funds. One positive step towards this is the establishment of the CBFM Special Account. This would partly take care of the huge investments needed
by the sector as certainly, CBFM is one of the biggest programs of the government in terms of land area coverage and number of beneficiaries.

Private sector participation is an important ingredient in financing some critical programs particularly in the area creating forest capital and enhancing the value of existing forest capital. However, the government must be facilitative in providing mobility of investment capital. Mobility implies moving from one mode of business approaches, e.g., labour-intensive to more capital-intensive ventures, requiring ever larger investments or vice versa. Mobility is, however, constrained by several factors: lack of entrepreneurship, technology, institutional support and development infrastructure. There are several cases, in developing countries, where small local undertakings evolved into large enterprises. The Village Forest Associations of Korea expanded their investment capital, through their federations at regional and national levels. In at least nine developing countries, domestic corporations developed into TNCs in forest-based sectors. This provides one of the positive notes to the issue of mobilisation of private investment in forestry.

In supporting local private sector or corporate sector investment, commercial and other banks can play a crucial role. Support for the large number of small investors whose sources of funds are their limited personal savings and loans from friends and relatives, rarely comes from any formal credit facilities. In some countries, micro-credit facilities like the Grameen Bank of Bangladesh have been developed. The credit administration should have the capacity to see that the investment does not end up as failures.

A clear awareness of the value of forest benefits and establishing a system for forest resources accounting will to some extent, help to attract investment into the forestry sector. Institutionalization of forest resources accounting would enable PFA and its regional instrumentalities to be in control of the information system. Providing the right information to potential investors would facilitate investment decisions. Thus, to attract more private investments into the sector, the DENR and its Regional Offices must start to upgrade their information system.

Schedule of Implementation

Figure 6.8 shows the implementation schedule for the priority programs under the Revised Master Plan.
Figure 6.8. Priority programs implementation schedule.

<table>
<thead>
<tr>
<th>PROGRAMS</th>
<th>Period of Implementation (in years)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1</td>
</tr>
<tr>
<td>1. Policy Reforms and Institutions Development</td>
<td></td>
</tr>
<tr>
<td>- Harmonization of forest and other policies</td>
<td></td>
</tr>
<tr>
<td>- In-depth review of policies, consultations</td>
<td></td>
</tr>
<tr>
<td>- Harmonization, policy reforms, codification</td>
<td></td>
</tr>
<tr>
<td>- Dissemination, continuing review, updates</td>
<td></td>
</tr>
<tr>
<td>- Reversion/retrofitting the PFA as a line agency</td>
<td></td>
</tr>
<tr>
<td>- Capacitation of forestry institutions</td>
<td></td>
</tr>
<tr>
<td>- National Council for Sustainable Forestry (NCSF)</td>
<td></td>
</tr>
<tr>
<td>2. Prioritization/watershed integrated land use planning</td>
<td></td>
</tr>
<tr>
<td>- Prioritization</td>
<td></td>
</tr>
<tr>
<td>- Watershed Landuse Planning</td>
<td></td>
</tr>
<tr>
<td>- Forest Boundary Delineation/Mapping</td>
<td></td>
</tr>
<tr>
<td>3. MIS, IEC and R &amp; D enhancement</td>
<td></td>
</tr>
<tr>
<td>MIS</td>
<td></td>
</tr>
<tr>
<td>- Upgrading of Central PFA MIS</td>
<td></td>
</tr>
<tr>
<td>- website installation, updating</td>
<td></td>
</tr>
<tr>
<td>- Upgrading of regional MIS facilities</td>
<td></td>
</tr>
<tr>
<td>- Regional Information gathering systems development</td>
<td></td>
</tr>
<tr>
<td>IEC, Training</td>
<td></td>
</tr>
<tr>
<td>Forestry and Environmental Education</td>
<td></td>
</tr>
<tr>
<td>Forestry Training</td>
<td></td>
</tr>
<tr>
<td>R &amp; D</td>
<td></td>
</tr>
<tr>
<td>4. Sustainable management of residual/other forests</td>
<td></td>
</tr>
<tr>
<td>- Delineation/de-marcation of prof'n &amp; prod'n forests</td>
<td></td>
</tr>
<tr>
<td>- Development of JV, CP &amp; PS models/ mechanisms</td>
<td></td>
</tr>
<tr>
<td>- Implementation of JV, CP &amp; PS</td>
<td></td>
</tr>
<tr>
<td>5. Forest area expansion</td>
<td></td>
</tr>
<tr>
<td>- Commercial Plantation</td>
<td></td>
</tr>
<tr>
<td>- Forest Rehabilitation</td>
<td></td>
</tr>
</tbody>
</table>

- Full time activity
- Part time activity
Figure 6.8. Continued...

<table>
<thead>
<tr>
<th>Programs</th>
<th>Period of Implementation (in years)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1</td>
</tr>
<tr>
<td>6. Protected area and biodiversity conservation programs</td>
<td></td>
</tr>
<tr>
<td>- Establishment of 93 PAs</td>
<td></td>
</tr>
<tr>
<td>- Delination/demarcation of 5 PAs by law</td>
<td></td>
</tr>
<tr>
<td>- Management, development and conservation</td>
<td></td>
</tr>
<tr>
<td>7. Forest industries development</td>
<td></td>
</tr>
<tr>
<td>- Rationalization</td>
<td></td>
</tr>
<tr>
<td>- Provision of new technologies in forest utilization</td>
<td></td>
</tr>
<tr>
<td>- Improvement of infrastructures</td>
<td></td>
</tr>
<tr>
<td>- Establishment of community-based industries</td>
<td></td>
</tr>
<tr>
<td>- Establishment of a Forest Industries Board</td>
<td></td>
</tr>
<tr>
<td>8. Sustainable management of grazing lands</td>
<td></td>
</tr>
<tr>
<td>Identification, demarcation, planning</td>
<td></td>
</tr>
<tr>
<td>Sustainable Management</td>
<td></td>
</tr>
<tr>
<td>9. Full development and implementation of M &amp; E, C M &amp; E, satellite photos</td>
<td></td>
</tr>
<tr>
<td>M &amp; E, systems upgrading/development</td>
<td></td>
</tr>
<tr>
<td>C &amp; I development for all types of forests/mgt</td>
<td></td>
</tr>
<tr>
<td>10. CBFM - cross cutting strategy</td>
<td></td>
</tr>
<tr>
<td>- Enhancement of CBFM implementation in existing sites</td>
<td></td>
</tr>
<tr>
<td>- Identification and appraisal of new sites</td>
<td></td>
</tr>
<tr>
<td>- Establishment and CO of new sites</td>
<td></td>
</tr>
<tr>
<td>- Site Development (Agroforestry, other forest pltns)</td>
<td></td>
</tr>
<tr>
<td>- Livelihood/Enterprise development</td>
<td></td>
</tr>
</tbody>
</table>

- Full time activity
- Part time activity
Budgetary Requirements

The priority programs of the Revised Master Plan has a total indicative budgetary requirement of 60,614 mil P over it 25-year period of implementation (Table 6.57). Among the programs with the biggest requirements are forest plantations and CBFM with totals of 34,000 and 17,075 mil P, respectively. The critical period which is the first 5 years has a total budgetary requirements of 21,115.3 mil P. The total requirement constitutes 62 % of public investment (37,584 mil P) and 38 % of private sector investment (22,031 mil P). Among the programs where private sector is expected to be heavily involved are the establishment of commercial forest plantations and CBFM where they are expected to collaborate with the POs for joint venture activities. Table 6.58 shows the details of the indicative budgetary requirements for the priority programs.

Table 6.57. Summary costs of priority programs under revised master plan (mil P).

<table>
<thead>
<tr>
<th>PROGRAMS</th>
<th>Implementation Period (in years)</th>
<th>TOTAL</th>
<th>Public Sector</th>
<th>Private Sector</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1-5</td>
<td>6-10</td>
<td>11-15</td>
<td>16-25</td>
</tr>
<tr>
<td>1. Policy Reforms and Institutions Development</td>
<td>60.0</td>
<td>0.0</td>
<td>10.0</td>
<td>20.0</td>
</tr>
<tr>
<td>2. Prioritization/watershed integrated land use planning</td>
<td>3,863.0</td>
<td>1,271.0</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>3. MS, EEC and R &amp; D enhancement</td>
<td>653.5</td>
<td>647.5</td>
<td>657.5</td>
<td>1,315.0</td>
</tr>
<tr>
<td>4. Sustainable management of residual/other forests</td>
<td>10.0</td>
<td>5.0</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>5. Forest area expansion</td>
<td>6,800.0</td>
<td>6,800.0</td>
<td>6,800.0</td>
<td>13,600.0</td>
</tr>
<tr>
<td>6. Protected area and biodiversity conservation</td>
<td>to be determined during the action planning</td>
<td>205.0</td>
<td>512</td>
<td>153.8</td>
</tr>
<tr>
<td>7. Forest industries development</td>
<td>60.0</td>
<td>60.0</td>
<td>60.0</td>
<td>120.0</td>
</tr>
<tr>
<td>8. Sustainable management of grazing lands</td>
<td>110.5</td>
<td>125.5</td>
<td>95.5</td>
<td>191.0</td>
</tr>
<tr>
<td>9. Full development and implementation of M &amp; E, C &amp; I</td>
<td>9,363.3</td>
<td>7,704.2</td>
<td>7.5</td>
<td>-</td>
</tr>
<tr>
<td>10. CBFM - cross cutting strategy</td>
<td>60,614.9</td>
<td>37,584.6</td>
<td>23,031.3</td>
<td>62.00</td>
</tr>
</tbody>
</table>
Monitoring and Evaluation, and Communications

The monitoring and evaluation of the Revised Master Plan activities shall be conducted continuously. A designated office in the PFA (currently FMB) shall coordinate with the concerned sectors (e.g., LGUs, other GAs, private institutions, private sector groups, Regional Offices, and other stakeholders) regarding the activities being conducted and progress made by all sectors, including problems encountered by particular sectors, subsectors, and stakeholders in the implementation of the Plan. This office shall also assist field implementers in the dissemination of information available at the national level to the field implementers. Counterpart offices or units in the central, regional, and other field levels and in other relevant government agencies shall also be established. Funding for the activities of these offices shall be integrated in their regular budget proposals. However, a seed funding for its operation is necessary to set up the whole system in the bureaucracy.

Review and Revision

The review and revision of any plan is necessary basically because the relevant conditions and premises by which the plans were anchored may change through time. Likewise, future developments may render parts of the plans outdated or un-implementable. Hence, the Revised Master Plan shall be reviewed regularly. The first formal review shall be conducted in 2010 and to be repeated every 5 years thereafter. The review and revision process shall also be participatory as possible and may concentrate on the whole plan or only on components needing review and amendments.
1.0 INTRODUCTION

1.1 Background

Through the years, the forestry sector in the Philippines continuously declined in physical, economic and environmental terms. Most of the country’s once rich forests which generated substantial revenues to the government and the society are now gone. Such decline has been largely attributed to a number of inadequate and poorly-implemented forestry policies. These policies led to the rapid exploitation of timber from virgin forests at prices far below real market values. The proliferation of only short duration timber licenses in the past discouraged long term investments in forest development and dampened private sector initiatives. Forest destruction rose to very alarming levels while forest recovery through natural and artificial means never coped with the forest destruction rate. Furthermore, the institutions mandated to implement forest policies to address all these problems had not been equipped to fully address the situation. Meanwhile, the social settings in the uplands and forest adjacent communities continue to exert pressure on natural resources and made the tasks of conserving the forests more difficult. The very high incidence of poverty in the uplands continues to exacerbate environmental degradation problems.

In response to the rapidly declining conditions of the country’s forest resources, the Philippine Government through the assistance of Asian Development Bank (ADB) and the Finnish International Development Agency (FINNIDA), formulated a 25-year Philippine Master Plan for Forestry Development (MPFD) in 1989-1990. The master-planning work was carried out jointly by DENR and a team of specialists managed by the Jaakko Poyry Oy of Finland and MADECOR of the Philippines. The MPFD was accepted and approved by the Philippine Cabinet in June, 1990. It consists of three umbrella programs and fifteen major programs designed to revitalize the Philippine Forestry Sector back to its former significant role in national development. Formulation of Regional forestry development plans ensued, and was followed by formulation of a medium term plan for 1993-1998, all of which were completed in 1992.

The Department of Environment and Natural Resources (DENR) has the primary responsibility in implementing the MPFD. Of the 15 major programs of MPFD, domestic and international support were concentrated on two: a) the People-Oriented Forestry Program (POFP) which evolved into Community-Based Forest Management (CBFM) Program and b) Biodiversity Conservation, which became the foundation of the Integrated Protected Area System (IPAS). A 1999 UNDP fact-finding mission on preliminary review also noted successes of MPFD in selected areas. However, several major programs did not progress as projected. The DENR struggled and failed to get the needed support for the successful implementation of the Plan. The failure of the proposed bill on “sustainable forest management” to be passed into law further kept the DENR from pursuing aggressive sustainable forest management strategies because of lack of enabling forest policy in the sector.

Finally, since the MPFD was formulated, several new developments and concerns have emerged in forestry, both in the local and international fronts. These issues now affecting forestry in the country were unforeseen at the time MPFD was formulated. Among these are the following: a) forestry and land-use implications related to climate change; b) forest certification; c) development and implementation of criteria and indicators for sustainable forest management; and, d) increasing recognition of the role of forests and forestry in poverty eradication and support of sustainable livelihood, among others. The review of MPFD implementation conducted by UNDP mission also noted several weaknesses and aspects of the Plan that had become less relevant in guiding the country’s forestry activities. The mission recommended the review and revision of MPFD taking into consideration the changed environment and priorities in the Philippines and other emerging trends in local and international forestry. In February, 2000, ADB hosted a forum on Philippine MPFD where an action agenda was proposed. Such agenda also called for the Government and all stakeholders to re-evaluate, revise and promote adherence to MPFD considering other emerging issues in forestry and the environment sector.
1.1.1 Project Objectives:

The project has the following specific objectives:

a. To develop a clear framework plan for review and revision of the MPFD;

b. To assess the accomplishment of MPFD relative to its six objectives, namely: i) conservation of the forest ecosystem and its diverse genetic resources; ii) promotion of social justice and equity; iii) placement of the country’s production forests under sustainable management; iv) proper land management; v) proper management of watersheds; and, iv) contribution to employment and growth of the local and national economies;

c. To ascertain the extent to which achievement of the MPFD’s objectives has contributed to the alleviation of poverty and improvement of food security among rural poor, particularly those located in forestlands/upland areas;

d. To re-evaluate, revise and/or update the MPFD as appropriate, taking into consideration the need for strong partnership with relevant and major stakeholders;

e. To identify and recommend needed remedial measures, including further strengthening of policies and institutions, to hasten the full attainment of MPFD’s objectives.

1.1.2 Basic Project Methodology:

The Project was carried-out using a five-step methodology as follows:

- Review of the objectives of the Master Plan for Forestry Development;
- Assessment of the achievements and extent of implementation of MPFD programs and effectiveness of supporting policies;
- Conduct of field programs reviews and stakeholders’ consultations;
- Policy analysis and assessment; and
- Preparation of MPFD programs and policy revisions.

The SPPD project team members worked hand-in-hand with a counterpart FMB staff. Other organizations, i.e. SEARCA and TREES, Inc., were contracted to assist and do facilitation services in the conduct of regional workshops and consultations and in the conduct of special studies related to overall assessment of forestry accomplishments under MPFD.

Basic to the overall process of project implementation is consultation with various stakeholders. Emphasis was given to this participatory approach where a great majority of different stakeholders in the sector was consulted.

The identification of subsector strategies involved the following major activities:

- identification of specific policy requirements that must support related program thrusts and directions, and must address and prioritize the various issues raised during workshops, consultations and field validations
- identification of resource requirements
- analysis of strategic impacts
- anticipated constraints, mitigating strategies
- specific institutional and human resources development directions

Below (Figure 1.1) is the overall framework for the Master Plan project implementation.
1.1.3 Basic Strategic Program Thrusts and Directions of Revised MPFD

Given the situations and desired scenarios of the different forestry subsectors, revised strategic directions were formulated. This process relied significantly on the issues, comments, and suggestions raised in various papers presented during regional consultations and workshops. Among the pre-identified strategic program thrusts and directions explored are as follows:

- Addressing the vicious cycle of forest degradation and upland poverty
- Enhancing watershed integrity and its capacity in sustaining supply of goods (wood, water, food, shelter, medicine, etc.) and enhancing delivery of environmental services
- Enhancing private investments, viability and economic contributions of forest-based industry
- Promoting forest science in forestry, and rationalizing forestry education and extension
- Ensuring productive participation of various stakeholders and equitable sharing of benefits
- Institutional streamlining and capacitation

The overall planning framework/strategy was anchored on the watershed and ecosystem management approach as overarching principle in forest resources management. Among the considerations emphasized under this framework is the adoption of a management planning tool which has the flexibility to incorporate unique features and other exigencies of the watershed and the institutions managing them. Basic to this is a comprehensive resource assessment at all field level offices for planning and management purposes and adoption of practical operational systems for putting every ha of forest land into definitive management system (under SDUs), each with accountable land manager, equipped with the proper knowledge and tools for effective resources management.

1.1.4 Policy and Legislation

An assessment of the general policy situation was conducted together with the important factors that hinder the effectiveness of forest policies. Policies or rules for that matter, become weak if they have defects, whether structural or formulation related. Defects contributory to weak policy implementation were examined together with the policy opportunities and constraints that worked positively or negatively to the sustained development of the sector. Likewise, the project drew policy suggestions from the sector itself through the regional consultations/workshops conducted, and based...
on initial analysis already made or based on the observations of those who are directly implementing or are affected by forest policies and decisions.

1.1.5 Monitoring and Evaluation

An assessment of the current M & E systems was conducted. The team examined requirements for the M & E to be a practical and effective tool in ensuring success of policies, programs and projects and in improving decision making potency to improve the chance of success of all programs implemented by the sector. It explored practical M & E frameworks for different levels of decision making, featuring a tapering information volume for the consumption of different hierarchical levels (e.g., CENRO, PENRO, REGION, and CO). The Team also examined the national criteria and indicators for forestry and the potentials and merits of forest certification to be made the backbone of a strong M & E component in every sector's activity. Furthermore, it looked at how sub-sectoral M & Es could be designed to improve feedback processing and ensure effective communication system within the sector.

1.2 The 1990 Master Plan for Forestry Development

Through a technical assistance from Asian Development Bank and the Finnish International Development Agency, the 1990 Master Plan for Forestry Development was prepared primarily to guide the long-term development of the forestry sector in the Philippines. The work was carried out by DENR jointly with a team of specialists managed by the Jaakko Poyry Oy of Finland and MADECOR of the Philippines. The planning exercise adopted a participative strategy through extensive consultations with the sectors' stakeholders. The Plan was sought to be institutionalized within DENR and other concerned agencies. The draft was subjected to a multi-sectoral review, as well as to in-house review by DENR's top executives from the central and regional headquarters.

The 1990 Philippine Master Plan for Forestry Development (1990 MPFD) spelled out the goals and objectives of the country's forestry sector; the development programs designed to meet the objectives set; the resources required to implement the programs; and the scenarios and impacts envisaged as the results of program implementation. It was designed to point the long term direction of the forestry sector, and to draw the support needed to move the sector into the prescribed direction.

1.2.1 Importance of the Forestry Sector

The 1990 MPFD highlighted the significance of the forestry sector as a 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 a sustained growth in agriculture and industry. Besides, forest lands are the main watersheds of rivers which provide water for various uses. Soil erosion and hydrological deterioration of these watersheds caused losses in productivity and utility of infrastructures. The total off-site and on-site costs of forest degradation was estimated at P11.6 billion annually. The Plan also highlighted 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, among others. However, there were many threats to forest resources identified, among which are: the tremendous pressure from an increasing population in search of land to till and in need of wood, the over-exploitation of timber resources, and inadequate forest development, management, and conservation efforts.

1.2.2 General Objectives

The general objectives of the Plan are:

- Meet the needs for wood and other forest products by placing all the country's production forest under sustainable management,
• Contribute to the production of food, water, energy, and other needed commodities by properly managing the upland watersheds.

• Protection of the land and its resources against degradation and ecological devastation through proper land management systems and practices.

• Conservation of the forest ecosystems and their diverse genetic resources.

• Contribute to employment and growth of national and local economies through fully developed forest-based industries.

• Promotion of social justice and equity and the recognition of the rights of indigenous cultural communities (ICC) in the management, conservation and utilization of forest resources.

1.2.3 **Major Scenarios, 1990 MPFD**

Under the Master Plan scenario, logging will be banned in the remaining old growth dipterocarp forests while allowing such in the production forests of about 2.5 million ha of second growth dipterocarp forests. Likewise, at least 100,000 ha of pine forests will remain under production. Conversely, deforestation was expected to drop gradually to almost 4,000 ha per year as the country’s forests are placed in the hands of capable managers, mainly coming from communities and the private sector. Reforestation will be given a boost by increased participation of the local people after their access to the forest resources has been recognized. It is envisaged that government and private efforts will result in close to 3 million ha of plantation forests by 2015. The implementation of the Master Plan was also expected to result in the reduction of brushlands from 2.46 million ha to only 0.90 million ha; grasslands from 1.54 million ha to 0.68 million ha and the other extensive land uses from 6.59 ha to about 5.0 million ha. The reduction in these areas are projected at 3.00 million ha in 2015.

Under the wood supply scenarios, the combined log production from areas under TPSA and areas managed by local communities, was projected to increase from the current 3.2 million cu m to about 5 million m³. From the pine forests it is estimated that about 0.23 million cu m of timber and poles can be sustainably produced. Timber production from plantations is categorized as those coming from old (those established before 1990) and from new (after 1990) plantations. Wood production from the old plantations is expected to increase from the 1990 projected level of about 1.9 million m³ to about 3.5 million cu m. Under the Master Plan, the new plantations are expected to yield about 14.8 million m³ of wood including pulpwood by 2015. Despite projected increase in fuelwood from existing and new plantations and from agricultural areas, there will still be a deficit of about 14.9 million cu m. On the aggregate level, a positive supply balance of close to 14.0 million cu m was projected under the Master Plan scenario.

Regarding forest industry scenarios, the wood mechanical industry is envisaged to retool and also to establish new industries for export purposes and for community processing. It is expected that the country will not only be able to satisfy its domestic requirements for sawnwood and plywood but will also be able to export these products. A new pulpmill was seen to be established to enable the country to minimize its pulp importation.

On other expected impacts, it was expected that through legislation forest charges will be raised to reflect market prices. Stumpage price could be from 20-30% of the market price. At this price range, the government can generate immediately about P1.58 billion from harvested logs from the natural forest. With allowable cut expected to increase through the years, the government can generate as much as P2.52 billion at 1990 prices.

Employment in forest-based activities was expected to increase by about 6.4% annually. Moreover, close to 4.0 million ha land under extensive land uses such as brushlands, grasslands, and
kaingin areas will be converted to forest plantations or intensively used. It was estimated that this will result in lower rates of soil erosion, in the order of magnitude of 1.3 billion tons a year by 2015 as against the current 2.2 billion tons a year. This is equivalent to about 73 t/ha/year in 1990 to about 44 t/ha/year in 2015.

1.2.4 The Master Plan Programs

There were a total of 15 programs under the 1990 MPFD grouped under three (3) umbrella programs namely: Man and the Environment; Forest Management and Products Development; and Institutional Development.

1.2.4.1 Man and the Environment Programs

Under this umbrella program, five programs were formulated as follows:

- People-oriented forestry
- Soil conservation and watersheds management
- Integrated Protected Area System (IPAS) and Bio-diversity Conservation
- Urban forestry
- Forest Protection

1.2.4.2 Forest Management and Products Development Programs

- Management of the natural dipterocarp forests
- Management of mangroves, pines and other natural forests
- Forest plantations and tree farms
- Wood-based industries
- Non-wood forest based industries

1.2.4.3 Institutional Development Programs

- Policy and legislation
- Organization, human resources, infrastructures and facilities
- Research and Development
- Education, Training and Extension
- Monitoring and evaluation

1.2.5 Total Costs and Financing of the 1990 MPFD

The aggregate cost of the 15 Master Plan programs is P192.6 billion over the 25-year period (1991-2015). The average annual cost for the first 5-year period (1991-1995) is P7727.7 million, while the average annual cost for the entire planning period is P7713 million.

On the average, projected government financing is less than one-fourth (22.5%) of the total Master Plan costs, but program-wise, projected government financing varies from 9% to 69%.

The private sector is envisaged to participate actively in the Master Plan implementation and funding. About 32.3% of the total Plan cost is projected to be shouldered by the private sector. The bulk of the private sector financing is projected to occur in two programs: wood-based industries and plantation forests, which are carried mainly by industrial companies. Private sector financing also includes small scale operators and NGOs in people-oriented forestry and in wood and non-wood forest industries.
Foreign financial aid is seen to be vital for the funding of the Master Plan. Most if not all of the Master Plan programs are characterized by strong social dimension and equity concern, high environmental and conservation contents, and firm thrust in urgent transition to sustainable development and utilization of forest land based on economic products. The foreign financing portion for the entire 25 years covers about 45.2% of all Master Plan costs.

1.3 General Assessment of 1990 MPFD Implementation

1.3.1 Overall Forestry Sector Condition

The Philippine forestry sector is in the decline in terms of recorded contributions to the national economy and in environmental and physical terms. Most of the country’s once rich forests which generated substantial revenues to the government and the society are now gone or in various stage of degradation (Table 1). Such decline is largely attributed to a number of inadequate and poorly-implemented forestry policies which led to the rapid exploitation of timber from virgin forests at prices far below real market values. Under the implementation of the Revised Forestry Code of the Philippines (PD 705) which was passed in 1975, the sector continued to decline. The proliferation of only short duration timber licenses in the past discouraged long term investments in forest development and environmentally-sound forest management practices. The unstable policy environment also dampened private sector investments in forestry. Figure 1.2 shows the problem tree for the sector embodying the chain of events that leads to its decline.

<table>
<thead>
<tr>
<th>Year</th>
<th>Forest Cover</th>
<th>% of Total Area</th>
</tr>
</thead>
<tbody>
<tr>
<td>1575</td>
<td>27.5</td>
<td>92.0</td>
</tr>
<tr>
<td>1863</td>
<td>20.9</td>
<td>70.0</td>
</tr>
<tr>
<td>1920</td>
<td>18.9</td>
<td>64.0</td>
</tr>
<tr>
<td>1934</td>
<td>17.8</td>
<td>57.3</td>
</tr>
<tr>
<td>1970</td>
<td>10.9</td>
<td>36.3</td>
</tr>
<tr>
<td>1980</td>
<td>7.4</td>
<td>24.7</td>
</tr>
<tr>
<td>1990</td>
<td>6.7</td>
<td>20.7</td>
</tr>
<tr>
<td>2001</td>
<td>5.4</td>
<td>18.0</td>
</tr>
</tbody>
</table>

Forest destruction rose to very alarming levels while forest recovery (Table 1.2) through natural and artificial means never coped with the destruction rate. During the 1990 period, estimates by DENR (2002) placed forest destruction rate at an average of 130,000 ha annually. Furthermore, the institutions mandated to implement forest policies to address all these problems had not been equipped to fully address the situation. The failure of the efforts over the past few decades to halt the vicious cycle of deforestation, forest degradation and upland poverty has primarily been the result of inadequacies in institutional aspects particularly in policy implementation due to weaknesses in the structure of forestry sector organizations.

Meanwhile, the social settings in the uplands and forest adjacent communities continue to exert pressure on natural resources and made the task of conserving the forests more difficult. The very high incidence of poverty in the uplands continues to exacerbate environmental degradation problems. At the same time, different forest stakeholders are clamoring for more involved participation in the planning,
management and utilization of forest resources. The playing field now becomes the arena of many players, each wanting to say his piece in the proper management of forests, through participatory approaches. Such is a consequence of the lost of confidence to traditional forest managers and the increasing awareness on the importance of forests to the very survival of the nation. The importance of the roles of institutions is now becoming apparent and needs important attention and considerations in any policy, planning and program implementation activities designed to bring back the sector into more responsive and significant position.

In a properly functioning institution, policy is the central piece which provides the goals and the necessary directions and guidelines. Appropriate policy instruments such as the legal system, planning

---

Table 1.2. Area reforested by the government and the private sectors (in '000 ha).

<table>
<thead>
<tr>
<th>Year</th>
<th>Government</th>
<th>Non-Government</th>
<th>Grand Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>2001</td>
<td>26,524</td>
<td>4,920</td>
<td>31,444</td>
</tr>
<tr>
<td>2000</td>
<td>21,740</td>
<td>5,892</td>
<td>27,632</td>
</tr>
<tr>
<td>1999</td>
<td>31,184</td>
<td>10,983</td>
<td>42,167</td>
</tr>
<tr>
<td>1998</td>
<td>33,219</td>
<td>9,149</td>
<td>42,368</td>
</tr>
<tr>
<td>1997</td>
<td>49,301</td>
<td>15,935</td>
<td>66,237</td>
</tr>
<tr>
<td>1996</td>
<td>18,869</td>
<td>27,227</td>
<td>46,096</td>
</tr>
<tr>
<td>1995</td>
<td>21,841</td>
<td>43,392</td>
<td>65,233</td>
</tr>
<tr>
<td>1994</td>
<td>18,032</td>
<td>31,519</td>
<td>49,551</td>
</tr>
<tr>
<td>1993</td>
<td>6,347</td>
<td>12,864</td>
<td>19,211</td>
</tr>
<tr>
<td>1992</td>
<td>24,304</td>
<td>16,289</td>
<td>40,593</td>
</tr>
<tr>
<td>1991</td>
<td>73,502</td>
<td>19,437</td>
<td>93,039</td>
</tr>
<tr>
<td>1990</td>
<td>153,949</td>
<td>37,714</td>
<td>191,663</td>
</tr>
<tr>
<td>1989</td>
<td>89,452</td>
<td>41,952</td>
<td>131,404</td>
</tr>
<tr>
<td>1988</td>
<td>31,226</td>
<td>32,957</td>
<td>64,183</td>
</tr>
<tr>
<td>1987</td>
<td>28,843</td>
<td>10,986</td>
<td>39,829</td>
</tr>
<tr>
<td><strong>Average</strong></td>
<td><strong>41,896</strong></td>
<td><strong>21,481</strong></td>
<td><strong>63,377</strong></td>
</tr>
</tbody>
</table>

Source: FMB.
and programming, budget and revenue system, support services (i.e. research and extension and information) and the sectoral organizations cover the rest of the institutional aspects. Institutional capability is reflected in the performance of the sector.

An analysis of the situation in the forestry sector of Philippines vis a vis the 1990 Philippine Master Plan for Forestry Development (MPFD) has been done, to assess the sectoral performance and to identify and highlight the weaknesses, inadequacies, problems, constraints and issues. The intention is to flush down those concerns which calls for urgent interventions, since some of the constraints have crippled the institutions and the sector as a whole.

1.3.2 Accomplishments under 1990 MPFD

One of the most visible accomplishments of the 1990 MPFD is the CBFM project which is under the People Oriented Forestry Program. Based on the program targets, there is supposed to be 3.4 M ha of forest lands under tenure until the year 2000. At present, around 5.7 M ha are under CBFM (Table 1.3). CBFM is also another program effective in closing many open access areas. Another area where the 1990 MPFD overshot its target is in the area of Protected Area and Biodiversity Conservation where around 325,000 ha were to be established under buffer zones and protected area comparing to the accomplishment of 3.2 million ha under the National Integrated Protected Area System.

Similarly, there are many positive developments under the program of Soil Conservation and Watershed Management, as there are several key accomplishments under this subsector. For example, the sector adopted the watershed and ecosystem management approach (through DAO 99-01), as the overarching principle in forest management. WEM espouses the adoption of holistic, multiple-use and sustainable management of resources within watersheds. It also involves adoption of planning tools and management strategies that promote ecology among people, resources and environment; adoption of a management system that has the flexibility to safeguard the integrity of watershed functions and system that endeavor to promote the welfare of stakeholders affected by them. Moreover, the DENR endeavored to implement several projects, e.g., FSP, ENR-Secal Project, NRMP with PSIWRM and Guidelines for Watershed Management and Development, etc., which pursue soil conservation and watershed management in the purview of participatory and multisectoral involvement of different watershed stakeholders.

However, in terms of other program targets, all other programs were under-achieved in terms of physical targets. For example, there was a plan to establish 1.3 million ha of forest plantations between 1991-2000. The sector achieved around 0.68 million ha during the period for a 50% accomplishment. Moreover, the quality of these reported plantations is far from satisfactory because of the low survival rate of government initiated plantations. Another target under institutional development is the reduction of forestry schools offering forestry and allied courses from then 27 schools to 14 strategically located schools to arrest the declining quality of forestry graduates. Instead, there are now 52 forestry schools offering forestry resulting to low quality of turnouts. Table 3 shows a summary matrix of target and accomplishments under the 1990 MPFD implementation.

1.3.3 Issues/Problems/Constraints

Among the major issues, problems and constraints identified by the team relative to the implementation of 1990 MPFD are as follows: (note: the details of the issues, problems and constraints are discussed under Section 2.0 on Subsectoral Assessment)

- Policies and institutional arrangements
  - inadequacies of forestry sector policies; no updated forest policy to guide the sector;
  - inadequacies of legal instruments, weaknesses of organizational structure of public forest administration and management;
Table 1.3. Summary of targets and accomplishments under the 1990 MPFD.

<table>
<thead>
<tr>
<th>TARGET (1990-2000)</th>
<th>ACCOMPLISHMENTS</th>
<th>REMARKS</th>
</tr>
</thead>
<tbody>
<tr>
<td>I. Man and Environment</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3.4 mil ha under tenure under different POPP programs</td>
<td>4.4 mil ha tenured, 1.3 mil ha in process</td>
<td>Accomplished under CBPM program</td>
</tr>
<tr>
<td>13,000 ha ANR projects</td>
<td>around 14,000</td>
<td>Developed under CBPM-JBIC</td>
</tr>
<tr>
<td>63 mini forest parks established</td>
<td>over 480 parks already established in MM including those inside private sub.</td>
<td>Includes those established before 1990.</td>
</tr>
<tr>
<td>780 km of greenbelts/roadside planting</td>
<td>No records except for seedlings planted (2.1 mil from 1990-2002) in MM</td>
<td>Many of those planted have died, or replaced, removed or destroyed due to new infrastructures like road widening</td>
</tr>
<tr>
<td>Deforestation to drop to 24,000 ha annually by 2000</td>
<td>The rate now is around 80,000 ha/year although there are no official estimates from FMBA yet</td>
<td></td>
</tr>
<tr>
<td>Reduction of brushland from 2.46 to 2.04 mil ha</td>
<td>2,200 brushland as of 2000</td>
<td>Brushlands are the subject of current developments under FSP</td>
</tr>
<tr>
<td>II. Forest Management and Products Development Programs</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1, 673,000 ha of PA forest estate under dept forest established by 1995</td>
<td>864,000 ha declared</td>
<td>Declared under PA 7586, but not yet delineated</td>
</tr>
<tr>
<td>Logging banned in old growth forests</td>
<td>Logging ban effected</td>
<td>Through PA 7586</td>
</tr>
<tr>
<td>2.5 M ha of permanent production residual forest</td>
<td>Production forest not yet delineated</td>
<td>Lack of funds to implement delineation, change of priorities</td>
</tr>
<tr>
<td>1.3 M ha of forest plantations</td>
<td>800,000 accomplished</td>
<td>Mostly loan driven, no records on basic plantation information</td>
</tr>
<tr>
<td>44,000 ha of mangrove plantations</td>
<td>around 15,000 ha developed under FSP</td>
<td>12,000 developed under CBPM-JBIC</td>
</tr>
<tr>
<td>40,000 ha of pine plantations</td>
<td>1,700 accomplished</td>
<td>Under CBPM-JBIC</td>
</tr>
<tr>
<td>95,000 ha of rattan plantation</td>
<td>11,959 ha established</td>
<td>Under FSP I &amp; II</td>
</tr>
<tr>
<td>80,000 ha improved range rgt</td>
<td>none so far recorded</td>
<td>No unit at regional level to handle this.</td>
</tr>
<tr>
<td>Favorable climate and policy environment for wood based industries</td>
<td>The industry still clamors for policy reforms, e.g., conversion of expiring/former TLAs to IFMA, full deregulation of planted trees, delineation of production and protection forest, rationalization of the industry, etc.</td>
<td>There is already full deregulation of planted trees in private lands in Mindanao. Rationalization studies has been started, etc.</td>
</tr>
<tr>
<td>A rationalized wood based industry</td>
<td>No concrete accomplishments yet</td>
<td>Still under study by FMBA, no policy yet</td>
</tr>
<tr>
<td>Establishment of Timber Industry Board</td>
<td>Timber Industry Board not yet established</td>
<td>There are proposals to pursue this, e.g. TREES, Inc., 2003</td>
</tr>
<tr>
<td>40 sawmills retooled</td>
<td>No records</td>
<td></td>
</tr>
<tr>
<td>10 plywood mills retooled</td>
<td>No records</td>
<td></td>
</tr>
<tr>
<td>50 community sawmills</td>
<td>around 15 PCOs with approved sawmills?</td>
<td>No records at FMBA</td>
</tr>
<tr>
<td>III. Institutional Development Programs</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Enactment of SFMA before 1992</td>
<td>Not yet enacted</td>
<td></td>
</tr>
</tbody>
</table>
• no enabling policy to adopt the 1990 MPFD, the 1990 National MPFD and 1992 Regional MPFD are not being consulted in the conduct of regional planning and budgeting, non-implementation of DAO No. 23, Series of 1992 which is supposed to institutionalize implementation of 1990 MPFD through the National Forestry Planning Group (NPFG) with Regional and field level counterparts
• confusions in land tenure and disorder in landuse;
• deficiencies of human resource development;
• lack of intersectoral co-ordination in addressing crosscutting issues.

- Program implementation problems
  • inadequacies of planning and programming system;
  • funding uncertainties, lack of funds to implement various sectoral programs including MPFD components
  • deficiencies in implementing people-oriented (participatory) forestry programmes;
- R&D, Forest Utilization and Technology problems
  • unscientific management of natural forest resource;
  • undefined areas of protection and production forests
  • wasteful forest utilization and inadequate value addition;
  • neglect of non-wood forest products (NWFPs);
  • weaknesses of R&D and forest extension;
  • serious lapses in plantation development (starting from site selection, seed procurement, nursery management, plantation establishment and management, harvesting, and even lapses in the purpose by which a forest plantation is established);
- Weak IEC and Training
  • lack of a credible system of M&E, current systems not fully utilized by decision makers;
- Cross cutting issues
  • CBFM, as a cross-cutting strategy to rehabilitate and manage all forest lands and resources, has many things to patch up and build up from;
  • lack of boundary delineation on the ground;
  • deficiencies in conservation, protection and watershed rehabilitation;
  • lack of a system of natural resources accounting;
  • lack of system for C&I and forest certification.

Underlying all the problems/constraints/issues listed above, is the absence of real awareness and commitment on the part of decision makers. Awareness creation is a matter of good information and communication, along with public education on the economic and ecological significance forestry.

1.3.4 Potentials of the Sector

In spite of all the constraints being faced, forestry in Philippines has considerable potential for contributing to the development of the country – economically and ecologically. There is potential for:

• putting all forest areas under appropriate forest management systems that seek to obtain optimum economic and environmental benefits for forest communities, other stakeholders, and the society in general;
• expanding the area under forest cover through plantation establishment, enrichment planting and assisted natural regeneration;
• improving the quality of current natural forest stands through timber stand improvement and protection from man-made destructions, and pests and diseases;
• enhancing access to residual forests (through legally-allowed modalities) within production forest areas to improve wood supply position and manage the same in sustainable manner;
• tapping available private lands for forest plantations as demonstrated in CARAGA Region;
enhancing forest productivity through multiple-use management and improved technology, minimal or waste-free harvesting/high utilization recovery and increased forest production without risking environmental/ecological values

• revitalizing the forest-based industries through rationalization and appropriate incentives, improved primary and down-stream processing, new product development

• developing of non-wood forest products (e.g., herbal products, agroforestry ventures);

• appropriate and rational management of protected areas and buffer zones;

• benefiting from forest biodiversity protection and management;

• promoting of forest-based recreation and eco-tourism;

• increasing overall direct benefits from the forest through proper planning for forest management and conservation.

1.3.5 Strengths of the Sector

The country also has several significant strengths which are important and relevant in supporting sustained development of forestry sector. These are significant factors which will contribute to the growth of the forestry sector, if adequately backed by appropriate policies and institutional mechanisms. Among these are:

• A tradition and history of forest management which dates back from Spanish Regime;

• Existence of executive imprimaturs and operational models for productive DENR-LGU-Other stakeholders participation (DENR-LGU Joint MC, 2003-01)

• 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, and under congenial conditions;

• Philippines has an array of laws, rules and regulations, which can be modified/amended to suit the chosen developmental path for forestry;

• Existence of institutions for research and education which can be strengthened suitably;

• Existence of supporting institutions outside the forestry sector, such as the universities and centres of science and technology, fruitful collaboration can be developed with them;

• 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 integrated 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;

• Existence of experienced NGOs involved in supporting grass-roots organizations and people’s participation through group formation, provision of training, and promoting afforestation and environmental conservation;

• Availability of traditional knowledge on the uses of NWFPs, as well as artisanal/handicraft skills, which are yet to be adequately explored and utilized; this is also an area where rural women can increasingly participate;

• Existence of hard working labor force as valuable resource for providing reasonably-priced labor. This is a strength, in the short and medium-term which can enable Philippines to compete in international markets for processed products e.g. furniture, rattan and bamboo products, consumer articles based on NWFPs and handicrafts;

• Also, the constant efforts in facing the problems/constraints/ issues (irrespective of their nature and impacts) have helped to provide certain useful experiences to the sector.
2.0 SUBSECTORAL ASSESSMENT

2.1 Watershed

2.1.1 Introduction

The report covers the assessment of the current state of watersheds and watershed management in the Philippines along with the current policies and programs related to watershed management. The detailed and accurate illustration of the procedures adopted for this task is shown in Figure 2.3.

The figure shows that the sustainability of watershed resources and, hence also the flow of goods and services from the watershed, is directly determined by the capability of various actors and players in watershed management. When the major actors and players (local communities, LGUs, DENR, others) in watershed management are fully capable and properly motivated to perform their roles, the watershed resources are going to be sustainable. Mechanisms that will equip and motivate the actors and players such as IEC, training, equitable and just property rights system, institutional arrangement, viable livelihood systems and sound technologies and practices should be in place. For all these to happen, appropriate policies and well developed science must be there as pillars upon which the enabling mechanisms and the various actors and players can rest in stability under varying environmental conditions. The following elements are therefore essential for the success of watershed management in the country:

- appropriate tenurial arrangements for land and resource use and mode of governance;
- adequate access to appropriate technology and technical assistance;
- adequate training and IEC;
- appropriate mechanisms for equitable sharing of costs and benefits;
- adequate opportunities and support systems for sustainable livelihood enterprises;
- appropriate policies; and
- growing science allied to watershed management

Figure 2.3. Elements of sustainable watershed resources management (Cruz, 2002).
2.1.1.1 Current State of Watershed Management

2.1.1.1.1 The Philippine Watersheds

It is estimated that at least 70% of the total land area of the Philippines belong to watersheds of varying sizes (Table 2.4). Watersheds with area of at least 100,000 ha referred to as river basins comprise more than 10 M ha of the watershed areas. This includes areas inside and outside watersheds that are proclaimed as watershed reserves. Proclaimed watershed reserves refer to those watersheds that were specifically designated for various purposes such as domestic water supply, irrigation, hydroelectric power generation and multiple uses (Table 2.5). Watersheds are valuable not only because of its water resources but also because of forests and other natural resources found therein. Management of watersheds is hence critical in promoting the sustainability of all the natural resources in the watersheds.

2.1.1.1.2 Watershed Degradation

Many of our watersheds today are invariably degraded characterized by degraded forests, soil erosion, erratic streamflow, declining groundwater resource, loss of biodiversity, microclimate deterioration, and declining land productivity. Forest degradation is mainly due to the removal of natural vegetation from large area of land by converting forest into agricultural land, road construction and urban development. It also includes the reduction in the vegetation stock due to timber poaching, fuelwood gathering, and collection of rattan and other non-timber products. Forest degradation leads to loss of wildlife habitats, microclimate changes, and loss of production potential from a range of wood and non-wood renewable resources, and potentially to erosion and loss of nutrients. Latest estimates show that no more than 20% of the total area of the country is covered with forests. Almost 10 M ha of the country’s forest were lost between 1935 and 1988 at a rate of more than 150,000 ha annually. This drastically dropped to about 100,000 ha per year from 1989 to 1996. Regionally, only Regions 2 and 4 have more than 30% of forest cover remaining. On the watershed level, the forest cover varies from almost none to more than 50% depending on major factors like population, remaining natural forest resource base, availability of sufficient non-forest based alternative livelihoods and presence of accountable managers.

Soil erosion is considered as one of the worst problems of most watersheds in the country, with estimates of between 74 and 81 million tons of soil being lost annually, and between 63% and 77% of the country’s total land area affected. There are reports that 13 of the country’s 73 provinces have over half of their land area affected by moderate to severe erosion. Sedimentation has reduced the storage capacity of the country’s major reservoirs affecting water supplies for domestic, industrial, irrigation and power-generation purposes. Between 1973 and 1998, an estimated 20-30% reduction in area irrigated during the dry season by a number of irrigation systems (DENR 1999).

Table 2.4. River basins of the Philippines (NWRC, 1979).

<table>
<thead>
<tr>
<th>Drainage Area (km²)</th>
<th>Number of River Basins</th>
</tr>
</thead>
<tbody>
<tr>
<td>40 – 100</td>
<td>51</td>
</tr>
<tr>
<td>101 – 200</td>
<td>117</td>
</tr>
<tr>
<td>201 – 500</td>
<td>151</td>
</tr>
<tr>
<td>501 – 1,000</td>
<td>59</td>
</tr>
<tr>
<td>1,001 – 2,000</td>
<td>26</td>
</tr>
<tr>
<td>2,001 – 5,000</td>
<td>8</td>
</tr>
<tr>
<td>5,001 – 10,000</td>
<td>4</td>
</tr>
<tr>
<td>10,000 – 25,000</td>
<td>3</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td><strong>419</strong></td>
</tr>
</tbody>
</table>
Contrastingly, while many watersheds continue to deteriorate, the population that relies on the goods and services they provide steadily grows creating more pressure for the already overburdened natural resources in the watersheds. Watersheds continue to be the sole sources of water for domestic, agriculture, industrial and commercial uses in the country. The finite area of the watersheds however sets the limit to its capacity to meet the growing needs for water of an ever growing population. Around 975 MCM of water are estimated to be available daily to meet the demands from various sectors. It is shown that some areas are bound to experience water scarcity if the present pattern and rate of consumption do not change and that no increase in the present supply of available water takes place. According to projections, there will be more regions in the country that will experience water supply deficit by 2020. To guarantee the sustainability and availability of water, the mode of watershed management must improve focusing on strategies that will protect and or enhance the sustained ability of the watersheds to capture and store more rainwater and promote more conservation effective use of water resources.

### Table 2.5. Proclaimed and priority watersheds in the Philippines.

<table>
<thead>
<tr>
<th>Region</th>
<th>Forestland (ha)</th>
<th>Forests (ha)</th>
<th>Proclaimed Watersheds</th>
<th>Priority Watersheds</th>
<th>% Forest Cover</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>no.</td>
<td>ha</td>
<td>no.</td>
<td>ha</td>
<td>no.</td>
</tr>
<tr>
<td>CAR</td>
<td>1,479,269</td>
<td>6</td>
<td>113,009</td>
<td>12</td>
<td>1,573,700</td>
</tr>
<tr>
<td>1</td>
<td>473,097</td>
<td>10</td>
<td>6,167</td>
<td>8</td>
<td>797,812</td>
</tr>
<tr>
<td>2</td>
<td>1,717,793</td>
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Contrastingly, while many watersheds continue to deteriorate, the population that relies on the goods and services they provide steadily grows creating more pressure for the already overburdened natural resources in the watersheds. Watersheds continue to be the sole sources of water for domestic, agriculture, industrial and commercial uses in the country. The finite area of the watersheds however sets the limit to its capacity to meet the growing needs for water of an ever growing population. Around 975 MCM of water are estimated to be available daily to meet the demands from various sectors. It is shown that some areas are bound to experience water scarcity if the present pattern and rate of consumption do not change and that no increase in the present supply of available water takes place. According to projections, there will be more regions in the country that will experience water supply deficit by 2020. To guarantee the sustainability and availability of water, the mode of watershed management must improve focusing on strategies that will protect and or enhance the sustained ability of the watersheds to capture and store more rainwater and promote more conservation effective use of water resources.

### 2.1.1.2 Causes of Watershed Degradation

Watershed degradation in the Philippines is attributed to a wide range of physical and socio-economic factors that are often complex and to substantive degree localized in nature. These factors are described below.

**Natural Predisposing Factors**

- Monsoonal climate pattern that accounts for more than 60% of the total rainfall falling in the country and associated with high intensity rain events
- Extreme climate events such as the periodic El Niño and La Niña
- Frequent floods due to
- Rugged terrain coupled with geological instability associated with seismic and volcanic activity make the upper portion of many watersheds highly vulnerable
- Soils which are strongly acidic, with low natural fertility, strong leaching associated with high rainfall and rapid decomposition of organic matter
Direct Causes of Watershed Degradation

The direct causes of watershed degradation in the Philippines can be summed up as the absence of adequately skilled and properly motivated actors in watershed management that manifests in various ways as described below.

- **Erosive agricultural practices**
  
  These include absence or poor maintenance of erosion control measures in upland farms, improper crop rotations, shortening of the fallow period in kaiingin cultivation, insufficient or excessive use of fertilizers, and overuse of irrigation water.

- **Inappropriate forestry practices**
  
  These forest management practices such as the use of destructive technologies for harvesting timber and non-timber products, badly constructed logging roads, and inappropriate plantation establishment (e.g., removal of ground cover by burning/clean weeding, planting in lines up and down the slope). The replacement of a mixed natural forest with plantations of a very limited range of exotic species is also considered as a common practice that is inappropriately applied in many watersheds.

- **Overgrazing**
  
  Overgrazing, excessive livestock population and burning of pasture lands lead to soil compaction and/or a decrease of plant cover, both of which may, in turn give rise to soil erosion and reduced infiltration of rainwater.

- **Poor water resource management**
  
  Over extraction of water (for irrigation, urban and industrial use) from rivers and other surface water sources has led to reduced downstream availability of water. Inefficient irrigation practices, wasteful urban/industrial water use and leakages from water delivery systems contribute to water shortage problems, as does over-pumping of the aquifers. In lower watershed areas, the intensive use of tube wells has led to abstraction of water in excess of natural recharge by rainfall and river seepage and a progressive lowering of the water table (DENR 1999). In coastal areas, over-extraction of groundwater has resulted in salt water intrusion into the freshwater aquifer (a growing problem in parts of Cebu).

- **Unregulated land conversion**
  
  Uncontrolled land development in many watersheds contribute to watershed degradation particularly deforestation. Mass conversion of agricultural lands to commercial, industrial, residential, and recreational (golf courses) purposes usually force affected families to seek lands which are easy to access such as the marginal upland areas. Hence, unregulated urban and industrial expansion within lowland agricultural areas is also contributory to watershed degradation elsewhere.

- **Industrial activities**
  
  Include all human activities of a bio-industrial nature: timber processing, factory farming (e.g., large-scale commercial poultry and piggery farms), power generation, mining, infrastructure and urbanization, waste handling, etc. It is most often linked to pollution of different kinds (either point source or non-point). In addition to possible chemical and organic pollutants, uncontrolled rainwater run-off from mine spoil heaps, unconsolidated roadside cuttings and embankments, urban and industrial sites can be the source of significant quantities of downstream sediment (DENR 1999).
Indirect Causes of Watershed Degradation

Indirect causes of watershed degradation are the underlying reasons why inappropriate types of land-use and management are practiced and usually relate to the socio-economic circumstances of the land-users and/or the social, cultural, economic and policy environment in which they operate. The following are of particular significance in the Philippines:

- Population growth

  The growth of population in the uplands as well as inward migration from the lowlands brings excessive pressure on watersheds. The problem is particularly serious where the population is growing rapidly while the natural resource base continues to shrink due to over utilization.

- Poverty and absence of viable livelihoods

  Poverty is the underlying cause of much watershed degradation in the Philippines. The upland and mountain areas of the country are generally the poorest and least developed. The on-site users of watershed resources are predominantly rural. In the absence of viable alternative livelihood activities, most of these users have no recourse but to depend on small-scale farming and/or forestry-based activities for their livelihood.

- Lack of markets and other livelihood support systems

  Geographic isolation and the lack of a well-developed market infrastructure in most upland areas mean that the agriculture and forestry activities of upland communities have remained predominantly at subsistence levels. The opportunities for increasing cash income are largely restricted to small number of commodities that keep well, have high value or are easily transported. Lack of good roads and markets limits the scope for promoting the growing of perennial tree crops, as an alternative to annual food crops on steep slopes, if the produce is perishable and bulky.

- Land tenure

  Sub-optimal use and management of watershed resources can largely be explained by the tenure regime under which the resource users operate. The more insecure the user feels with regard to his/her long term rights to use a particular resource, the more he is inclined to exploit the resource to the maximum over the short term.

  Aggravating these problems are policies with inconsistent provisions on land classification, allocation and use. In particular, the provisions of PD 705, Mining Act of 1997, IPRA and NIPAS Law on jurisdiction and uses of watershed areas clash with one another leading to confusion in strategies and programs being undertaken. The multiplicity of land tenure instruments being issued such as IFMA, SIFMA, CCFS, CSC, CBFMA, CADT, CALT and CLOA under RA 7881 and 7950 also add to the confusion of land-use within many watersheds.

- Misconceptions and inadequate knowledge about watershed management

  It has long been thought that watershed management is only about water and that it is but a special use in forestry. The poor appreciation of the true concepts and principles underlying watershed management by the various watershed actors and players led to the evolution of policies and institutions that are insufficiently supportive of, if not completely opposed to the achievement of watershed management objectives. A number of provisions in PD 705, LOIs 845, 917 and 1002, PD 1515, EOs 223 and 224 of 1987, unduly confined watershed management to the protection and conservation of water resources precluding the management of many watersheds for their multiple uses.
Inappropriate conservation technologies

Many current conservation recommendations (e.g., SALT, terracing, reforestation) have high initial investment costs when compared to current land-uses and the incremental development costs are beyond what most rural households can absorb. Technology development will need to consider the integration of the traditional technologies into the development of new but more effective ones to increase acceptability and adoptability to the end users.

Lack of access to capital resources

Watershed users fail to adopt conservation effective technologies because they are costly and it is difficult to access financial and technical resources. Financing institutions are usually unwilling to open windows for lending money to the poor who do not have the ability to put up guarantees of their ability to pay like the watershed upland users.

Absence of mechanisms to facilitate coordination of mandates of various agencies

Organizational problems related to the integrated management of watersheds stem from the restricted and often conflicting mandates of the different development agencies operating in upland areas. In particular, there is often a conflict of interests and legal responsibility over land-use within watershed areas between DENR, DA, DAR and the LGUs. The delineation and coordination of jurisdiction and scope of responsibilities among the various agencies as provided for in various legislations such as P.Ds 705, 1159, E.Os 192, 223 and 224 of 1987, 258 of 1995, RAs 4850 amended by P.D 813, R.A 8371, LOIs 845 and 1002, and the Provincial Water Utilities Act of 1973, are not clear.

Absence of appropriate scheme for valuation and pricing of watershed resources

The absence of valuation and pricing scheme for the natural resources of a watershed contributes to the inefficiency in its use. Under valuation and under pricing of watershed resources failed to promote the resource conservation or encourage improved natural forest management.

Inadequate land use and management plans

Management of many watersheds in the country is saddled by the absence of good land use and management plans. Those with plans are mostly not better off than those without as plans, for land use and management plans are usually weakened by the lack of scheme with which integration and coordination with other relevant plans such as plans of a larger watershed where it belongs, or of LGUs that it encompass or of other adjacent watersheds or of the national government. Problems in proper plan integration is compounded by the lack of a comprehensive national land use policy.

Absence of institutional mechanisms to encourage active, collective and sustained participation of stakeholders in watershed management

The task of translating participatory approach into workable strategy on the ground acceptable to the large group of stakeholders that are involved still remains as the primary challenge. Failure in this task is common and has led to the failure of many management efforts. Despite the large community of watershed stakeholders, the task of recruiting support for the protection and conservation of watershed resources has been very difficult.

Inconsistent statutory and policy framework

The legal and policy environment in which watershed management takes place is characterized by overlapping and often conflicting policies on utilization and protection of watershed areas. Whereas,
there exist a range of legislative instruments for watershed management and forest protection, they have been used inconsistently and rarely with any real effect.

There are also policies which become inconsistent with the shifts in philosophy and management strategies. The remarkably slow process of instituting policy changes especially those that passed through legislation makes it so tedious to revise policies in order to make them consistent with the shift to new management strategies and philosophies. This is illustrated by the case of adopting CBFM as a strategy for managing certain portions of proclaimed watershed reserves and how its implementation is slowed down by the restriction to exploitation of any form as provided for in PD 705.

2.1.1.3 Current Initiatives Addressing Watershed Degradation

2.1.1.3.1 Policy

Several policies that directly address many of the causes of watershed degradation were passed since 1990. Some of the more significant policies are described below.

- **NIPAS Law** sets the framework for the protection of critical watersheds that are determined as areas essential for the conservation of biodiversity.

- **IPRA Law** emphasizes on the recognition of the rights of indigenous peoples to have jurisdiction over the management of the watershed resources within their ancestral domain. This law provides the security of tenure as well as the incentive for the indigenous peoples to invest in the long term protection and development of the watershed resources.

- **AFMA** provides the framework for the integrated management and development of the lowland and the upland portion of a watershed through the creation of the Strategic Agriculture and Fisheries Development Zones (SAFDZ). The limited scope of the SAFDZ that usually does not include the whole watershed leaves room for integration to include the whole watershed. Enhancing the participatory process in the delineation and management of the SAFDZ remain a challenge to the success of SAFDZ.

- **LGC** though not intended directly for watershed management purposes, provides the scope for the active frontline participation of the LGUs in watershed management particularly in relation to the devolved functions of the line agencies. The LGC gives power to the LGUs as comprehensive managers of all the natural resources found within its jurisdiction. However, the added responsibility poses the challenge of mobilizing additional financial, technical and human resources to the LGUs. There is also the challenge of maintaining a harmonious working relationship with the line agencies where its devolved functions originated to gain access to the pools of expertise they don’t have.

- **EO 263** enshrined the community based forest management as the national strategy for the management and development of forest resources in the country. This order gives primacy to CBFM over other strategies as the management strategy for forests. It provides the legal basis for the participation of the local communities therefore in the management of watersheds. The major stumbling block however, is the restriction in proclaimed watersheds for any user to engage in any exploitative activities that is inconsistent with the intention of the CBFM to provide opportunities for sustainable livelihood to the local communities.

- **DAO 98-42** allows for the harvesting of government plantations in production zones of protection areas. This is expected to encourage the concerned beneficiaries to take part in the protection of the watersheds.

- **DAO 99-01** mandates the DENR field offices to use the watershed and ecosystem framework in the management of forests in the country. The use of the watershed as the unit for forest planning and management will facilitate the integration of the forestry sector development with the other sectors
particularly agriculture, the LGUs and the local communities. It should also provide the opportunities for operationalizing multiple use management and therefore optimize the use of watershed resources for the benefits of the greatest number of stakeholders for the longest time possible. Lack of adequate database and skilled technical personnel continue to slow down the implementation of this order.

- **Joint DENR-DILG MC 98-01** provides the legal basis for the co-management of certain watershed areas between the DENR and LGUs. This circular allows the DENR to let certain LGUs to administer and manage watersheds or portions thereof. The DENR provides the technical assistance to the LGUs who remain accountable to the DENR in complying with the legal standards.

- **Joint DENR-DILG MC 2003-01** reiterates and strengthens the provisions of the Joint DENR-DILG MC 98-01. As co-managers, the DENR and the LGUs will be jointly responsible for the identification and establishment of communal forests, community watersheds and reforestation areas among others. The DENR can devolve forest lands to the LGUs based on approved forest land use plans (FLUP) that were developed through transparent, accountable and participatory process.

### 2.1.3.2 Institutional

- **Multistakeholder watershed management councils** had been formed in several watersheds such as the Laguna Lake Basin Authority, Iloilo Watershed Management Council and the Bukidnon Watershed Management Council. From the limited experiences we have so far, it is evident that more can be accomplished when the different agencies representing various sectors and the civil society come together and work toward the common goal of promoting the sustainability of watershed resources.

- **Farmer-led initiative** in watershed management is illustrated by the Land Care Association in Claveria, Bukidnon. It is a model of how community based peoples’ organizations can be effective in the dissemination of good soil and water conservation technologies in particular and in participatory watershed development in general.

- **Education and training** on agroforestry and soil and water conservation are available in several institutions such as the University of the Philippines at Los Baños, Mindanao Baptist Rural Life Center, and in a number of Centers for People Empowerment in the Uplands. While the academe continues to make their formal and non-formal training curricula relevant to meeting the expertise needed in managing watersheds in the country, several NGOs are becoming more active in the area of providing education and training to local communities and other players in watershed management.

- **GIS/MIS development** is an ongoing concern of several agencies and institutions after having been neglected for so many years. There is such an infectious enthusiasm on information systems that almost every government agency and units within each agency are committing to the development of GIS/MIS to beef up their respective capability to plan for and implement the best action plan attainable. However, it is needful of an integrative and coordinative direction so that the different initiatives can be unified to produce one integrated GIS/MIS in the most efficient manner.

- **Research and development** through the WMIC-WRDP an integrated research and development project was launched in 2002 in response to the need of generating empirical information base that can be used for improving the management of Kaliwa Watershed in particular and enhancing the management of other watersheds in general. Prior to this project, the Philippine Council for Agriculture, Forestry, Environment, Resources Research and Development (PCARRD) in collaboration with University of Georgia and Texas A &M embarked on an integrated watershed research and development project in Claveria and Lantapan, Bukidnon. Several other related research and development projects were also initiated during the 1990’s and are documented by Cruz et al. (2001). The immediate challenge is how to sustain the initial gains of the various research projects in Kaliwa Watershed, in Bukidnon and elsewhere. Ultimately, there is a need to maintain a network of experimental watersheds across the country for the purpose of generating on a sustained basis.
2.1.1.3.3 Technology

- Technology development and demonstration on soil and water conservation are continuing concern of several CPEUs and of the Institute of Agroforestry in UP Los Baños. There is a need to enhance the development of technologies that capitalizes on traditional knowledge and practices to increase acceptability and adoptability of new technologies. As far as possible technology development and demonstration need to be integrated with the network of experimental watersheds.

- Biodiversity conservation technology especially for production forests are currently being tested in one of the remaining TLA concession areas. Reduced impact logging and improved land use planning procedures are some of the measures that are being pilot tested.

- Watershed resource valuation and pricing schemes are continuously being studied and developed in several watersheds by several institutions. The major challenge to the implementation of valuation and pricing scheme for watershed resources that capture more effectively the full cost of making the resources available to the users is how to make the scheme acceptable to policy makers and users at large who firmly believe that most watershed resources like water are free goods.

- Guidelines for watershed management planning exist and will need to be disseminated widely in order to be useful. Once the MPFD is revised, these planning guidelines will need to be reviewed and integrated with other materials to provide a more updated, comprehensive and straightforward references for watershed planning and implementation at various levels.

2.1.2 The Watershed Management Component of 1990 MPFD

2.1.2.1 Major Issues in Watershed Management Addressed

The major issues that were supposed to be addressed by the watershed management component of the MPFD are as follows:

- Land use conflicts in many watershed areas
- Absence of secure land tenure
- The need to rationalize the rehabilitation of vast denuded watershed areas
- The need to broaden the base of watershed management actors and players
- The need to protect the upland portion of the watershed from occupation of migrants from the lowlands
- The need to improve the scheme of devolving administration and management of watersheds or portions of watersheds to other government agencies

2.1.2.2 Goals and Objectives

The goal is to have environmentally sound and sustainable land use for both tangible and intangible benefits. The objectives include:

- Isolation of the effects of poor land use
- Elimination of environmentally destructive land use practices
- Enhanced productivity of upland watershed resources
- Improved security of the forest reserves
2.1.2.3 Strategies

Soil erosion control and stabilization measures are the strategies identified to isolate the effects of poor land use. The strategy to eliminate destructive land use practices include:

- Strengthening and enforcement of existing regulations
- Resettlement of upland occupants
- Improved incentive system
- Improved monitoring of land use and encroachment

For enhancing the productivity of watershed resources, the following strategies were proposed:

- Prioritizing the areas that require immediate rehabilitation and special management attention for the conservation of soil and water and other key resources
- Improved planning

The strategy for improving the security of the watershed forest reserves involves the expansion of the base of watershed beneficiaries from the local up to the national level as a way of mobilizing people who are strongly motivated to invest in the protection of the watershed resources.

2.1.2.4 Programs and Targets

The watershed components of the MPFD are classified into either primary or supportive development component. The primary development components contribute directly to the attainment of the objectives while the supportive development components are directed to the development of the human and institutional capability to implement the planned projects.

The primary development components are as follows:

- Watershed management
- Assisted natural regeneration
- Range management
- Soil conservation in forestry operations

Among the supportive development components are as follows:

- Policy strengthening
- Institutional and manpower development
- Interagency cooperation
- Research support component

2.1.3 Assessment of the Responsiveness of the MPFD to the Current Conditions

The watershed component of the MPFD contains several strategies and programs which are useful in watershed management. The effectiveness of the MPFD is however weakened by the inadequate integration of the key principles in watershed management in the primary and support programs identified in the master plan. This is aggravated by the absence of legal basis for the implementation of the MPFD that prevented the all out transformation of the MPFD programs into doable actions on the field level.

The focus of MPFD on the conservation of soil and water underscores its bias on the use of the watershed for supplying water for various uses. Such bias does not only bring about serious inefficiency in the use of watershed resources but also undermines the sustainability of water the very resource it seeks to
protect, by failing to protect other watershed resources like vegetation which are essential element in maintaining the stability of hydrologic processes.

The MPFD touches on the important roles that DPWH plays in soil and water conservation in watersheds. It also provides for the secure tenure for upland farmers in an effort to motivate them to adopt soil and water conservation technologies. It misses however to consider the vital need to engage the various watershed stakeholders aside from DPWH and the upland farmers in the whole range of key activities in watershed management. Specifically, the MPFD lacks adequate treatment on how it intends to instill among the stakeholders a lasting sense of belongingness in the community of actors and players who are mutually bound by common aspirations to realize the sustainability of watershed resources for the common good. Most importantly, the MPFD lacks articulation of the need for a mechanism by which the stakeholders will be encouraged to actively take part in watershed management.
2.2 Natural Forest Assessment

2.2.1 Introduction

The end of the previous millennium saw a number of significant efforts and attempts at rationalizing forest management and utilization in the country coupled with strong moves towards the conservation and even preservation of the remaining old growth forests in the Philippines. For instance, the DENR issued a number of regulations designed to enhance forest protection. In 1995, multi-sectoral forest protection committees were institutionalized in the DENR system by virtue of DAO 95-17 which was later amended by DAO 96-39. This move was further strengthened with the implementation of the Forest Protection Information System.

This period also saw the rise of quite a number of local government units, non-government organizations and other cause oriented individuals who became vigilant over the destruction of forest resources. Among the prominent programs initiated other than DENRs are as follows: a) Bantay Gubat of the City Government of Puerto Princesa, b) Kilusang Sagip Kalikasan (KSK) by the provincial government of Palawan, and, c) Bantay Bukid Brigade in Mt. Kanlaon, among others. With these efforts, administrative conflicts and problems exist on the coordination between and among them. For instance, there is no standard norm/protocol for making apprehensions of forest violators and the confiscation of illegally extracted forest resources as practiced by the different organizations and/or the various forest protection programs. While the DENR is represented in most of these programs, there is a felt need for it to take a more active leadership in such endeavors particularly in making its presence felt in the field.

2.2.2 Natural forest status

2.2.2.1 The Dipterocarp Forests

At the beginning of the Master Plan, the country’s dipterocarp forests occupy an area of about 4.4 million hectares based on the consolidated RP-German and SPOT area statistics which were used by the MPFD. Of this total, 984,000 has were said to be virgin forests while the remaining 3.4 million hectares were residual in nature. Of this total, about 0.40 million ha are in national parks and other reserves which place the total of about 3.0 million hectares in production forests (MPFD, 1990). In 1997, the total area occupied by the dipterocarp forests was in the order of 3.5 million hectares of which 804,900 hectares are old growth and the remaining areas considered as residual forests (2.73 million hectares). Region 2 has the largest old growth (368,900 hectares) and residual dipterocarp forests (626,843 hectares) in the country.

Among the issues

In the decade of implementation of the Master Plan, timber license agreements still remain to be the major instrument issued for the utilization of the dipterocarp forests of the land. In 1990, about 307,000 hectares of the virgin forests then were subject to TLAs while for the residual forests, it was estimated to be 1.18 million has. There were about 75 TLA holders responsible for such forest lands. In 1996, there were only 31 TLAs awarded covering 1.3 million hectares. Most of these TLAs were in Region 13 with a total forest area of 659,760 hectares.

The management of the country’s dipterocarp forests continue to face challenges with the MPFD. One of these is the eventual phase out of the remaining TLAs as mandated by the 1987 constitution to be replaced by Timber Production Sharing Agreements (TPSAs) and small-scale utilization of forest resources. In 2002, there were only 7 or 8 TLAs remaining. As early as 1989, the DENR has started canceling TLAs who were found to be violating provisions of their agreements or whose performances were said to be wanting. The last of the TLAs will expire in 2011.

The silvicultural system for the Philippine dipterocarps underwent a number of innovations, all designed to increase the efficiency of logging operations and provide adequate protection to the forest resources. A number of policy issuances to this effect were made by the DENR to wit:
• Shift in logging from the old growth forests to the second growth forests (DAO 91-24)
• Annual Allowable Cut determination in the second growth forests (DAO 92-02)
• Ban on the use of high lead yarding systems in the dipterocarp forests (DAO 92-03)
• Annual allowable cut computation and the marking goal determination in the second growth dipterocarp forests (DAO 92-12)
• Regulations governing the establishment of buffer zones within forest lands (DAO-92-13)
• Conduct and submission of aerial photography by holders of TLA and the different programs and projects of DENR (DAO 92-17)
• Conduct of residual forest inventory in areas logged by active TLA holders within their operable second growth forests (DAO 93-28)
• Revised regulations governing the establishment and management of IFPs and management of residual natural forests for production purposes (DAO 93-60)
• Amending DAO 93-60 (DAO 93-68)
• Revised guidelines governing the issuance of certificate of origin of logs, timber, lumber and non-timber forest products (DAO 94-07)
• Guidelines governing the cutting, gathering and disposition of edible fruit-bearing trees (DAO 94-18)
• Revised general guidelines in the implementation of the sub-classification of forest lands and other alienable lands of the public domain (DAO 95-15)
• Adoption of the Log Control Monitoring System (DAO 96-04)
• Validity period of approved Integrated Annual Operations Plan (DAO 96-39)
• Conduct of TSI in residual forest areas covered by Community Forests Stewardship Agreements, Community Forest Lease Agreements, and Community Forest Management Agreements (MC 90-07)
• Prescribed DENR log marking procedures (MC 90-13)
• Clarifying the guidelines on TSI activities in dipterocarp forests (MC 90-16)
• Identification and demarcation of dipterocarp old growth forests (MC 91-14)
• Guidelines in the monitoring and evaluation of reforestation areas, enrichment planting and TSI by TLA holders (MC 92-01 and 02)
• Guidelines on the conduct and submission of aerial photography by holders of TLAs (MC 92-07)
• Submission of a medium term forest management plan for block I of the operable second growth forest and deferment of timber inventory in areas under blocks II and VI (MC 92-09)
• Prescribing guidelines in the verification of overlaps between the boundaries of forest lands and A&D lands (MC 92-14)
• Guidelines for the prosecution of illegal logging and related cases (MC 94-01)
• Implementing guidelines for the conversion of TLAs to IFMAs (DMC 94-21)
• Prescribed the no hauling of logs from virgin forests effective January 1, 1992 (MO 91-09)
• Prescribing guidelines for the re-evaluation of the result of the inventory and analysis of the timber resource data obtained within the second growth forest (block 1) of existing TLAs (MO 92-05)
• Adoption of revised procedures on the issuance of the Certificate of Origin forms (M 94-01)
• Creation and constitution of the National Federation of Multisectoral Forest Protection Committee (MO 95-04)
• Guidelines on the implementation of the Log Control and Monitoring System (MO 96-05)
• Guidelines on the protection and management of expired, cancelled and expiring TLAs (MO 97-05)

2.2.2.2 The Mangrove Forests

Estimate of total mangrove forests in the Philippines in 1988 stood at 139,725 hectares. Some ten years later (1997) this area was reduced to 112,400 hectares, down by 27,325 hectares (Table 2.7). In the latest estimate provided by the DENR, Region 09 which include ARMM has the largest block of mangrove forest (49,500 hectares), followed by Region 4 with 27,600 hectares. Regions 1 and 3 have the smallest mangrove forests at 100 hectares each.
Table 2.7. Mangrove areas of the Philippines in 1988 and 1997.

| REGION | 1988 |  | 1997 |  |
|--------|------|  |------|  |
|        | Area (ha) | % | Area (ha) | % |
| 1      | 200   | 0.1 | 100   | 0.08 |
| 2      | 3,400 | 2.4 | 3,700 | 3.29 |
| 3      | 500   | 0.4 | 100   | 0.08 |
| 4      | 51,000| 36.5| 27,600| 24.50|
| 5      | 9,900 | 7.1 | 500   | 0.44 |
| 6      | 2,825 | 2.0 | 2,500 | 2.22 |
| 7      | 9,650 | 6.9 | 2,100 | 1.87 |
| 8      | 24,850| 17.8| 500   | 0.44 |
| 9      | 19,300| 13.8| 49,500| 44.03|
| 10     | 8,600 | 6.2 | 19,900| 17.70|
| 11     | 7,100 | 5.1 | 5,700 | 5.07 |
| 12     | 2,400 | 1.7 | 200   | 0.17 |
| TOTAL  | 139,725| 100.0 | 112,400| 100.00 |

In 1992, Republic Act No. 7586 was passed by Congress of the Philippines which mandated the establishment and management of the National Integrated Protected Areas System (NIPAS). This promulgation provided teeth to the strategy of preserving the remaining mangrove forests in the country as embodied in the Master Plan of 1990. Consequently, a number of high biodiversity mangrove forests in the country were to become part of the protected areas system in the country as part of protected landscapes/seascapes, wildlife sanctuary, nature reserves, etc.

The enactment of RA No. 7586 also gave way to a number of Presidential Proclamations declaring certain parts of the Philippine archipelago as marine protected areas. For instance, there was Proclamation No. 431 dated 31 July 1994 which declared the coastal area and islands within Pujada Bay in the Municipality of Mati, Davao Oriental as a protected landscape/seascape. The destruction of the coastal and the marine ecosystems including the mangroves, seagrass, and coral reefs or the conduct of activities that could destroy or disturb those ecosystems and the resources in them were prohibited. Another was Proclamation No. 447, series of 1994 designating Palai Island and surrounding islets and marine waters in the Municipality of Sta. Ana, Cagayan as a marine protected area. The same prohibitions as contained in Proclamation No, 431 applies in this area. Very recently, there were Presidential Proclamation No. 271 (23 April 2000) for the Great and Little Sta. Cruz Islands Protected Landscape and Seascape in Zamboanga City; Presidential Proclamation No. 272 (23 April 2000) declaring the Chico Mangrove Wilderness in Cawayan, Masbate as the Chico Island Wildlife Sanctuary; the Agoo-Damortis Protected Landscape and Seascape by virtue of Presidential Proclamation No. 277 (23 April 2000); Murcians Isalogs Island as a Protected Landscape and Seascape with Presidential Proclamation No. 281 (23 April 2000); and the Albuquerque-Loay-Loboc mangrove swamp into a Protected Landscape and Seascape. On May 31, 2000, several days after the issuance of the above proclamations, there were Presidential Proclamations No. 316, 317 and 319 establishing Mabini Protected Landscape and Seascape, the Naro Island Wildlife Sanctuary, and the Bongsalay Natural Park respectively.

The start of the 1990s saw the issuance of new regulations defining access, limitations and conservation of mangrove forests in the country. DAO No. 15, Series of 1990 banned the cutting or use of mangrove resources in any form in the remaining mangrove forests that are not covered by existing Fishpond Lease Agreements (FLAs) and areas outside plantations. It also disallowed the granting and/or renewal of mangrove timber license and/or permit of any kind that authorizes the cutting including the debarking of the trees within the mangrove forests for commercial purposes in areas outside FLAs and mangrove plantations. Furthermore, this AO also banned the conversion of thickly vegetated mangrove areas into fishponds.
Plantation development, however, is encouraged in denuded or sparsely vegetated mangrove forests and A & D lands through an approved permit. The same order gives privilege to plantation developers to cut/harvest the planted trees within their jurisdiction, whether such is intended either for personal or commercial purposes as an incentive. DENR Memorandum Circular No. 5, Series of 1990 prescribed guidelines in the cutting of mangrove trees within approved FLA areas. With an approved permit issued by the DENR, trees to be cut are turned over to the DENR for disposition through public bidding. No cutting however is allowed if the area has 10% or more mangrove canopy cover and/or is capable of natural regeneration. FLA holder is also required to plant an area with mangrove species equivalent to the aggregate size where mangroves were clearcut in the FLA area.

These facilities which allow the harvesting and cutting of mangrove trees however, were nullified with the enactment by Congress of Republic Act No. 7161 which has as one of its significant provisions the banning of the cutting of all mangrove species. As the RA did not explicitly exempt planted mangroves from the ban, even the plantings covered in DAO No. 15 cannot be harvested. RA 7161, unless amended by Congress, is construed as a disincentive policy which may discourage coastal communities from engaging in worthy mangrove plantation development ventures.

Further efforts were also exerted towards rationalizing the development and utilization of mangrove forest resources in the country. DAO No. 2000-57 prescribed guidelines governing the implementation of mangrove subprojects under the Forestry Sector Project. A significant provision is the banning of the cutting of mangrove trees within the subproject and adjacent mangrove sites. The AO, however, allowed the gathering and/or harvesting of non-timber mangrove products on a sustainable basis with duly approved Resource Utilization Permit (RUP).

Among the issues on mangroves identified are as follows:

- Continued degradation and further threats of destruction
  
  Despite the significant strides made in the protection of the remaining mangrove forests of the country, there still exist a number of problems that pose serious threat to the integrity of such forests. For instance, the boundary delineation of mangrove protection forests is found to be still wanting in most areas in the country. Forest protection measures, and the formulation and implementation of comprehensive plans for the management of the same cannot be initiated unless there is a definite boundary that is marked on the ground for these mangrove forests.

  The continuing degradation of the mangrove forests in the country can also be attributed to the insufficient or complete lack of awareness on the importance of marine, coastal and mangrove ecosystems on the side of the public, most importantly, in the communities within or in the immediate periphery of mangrove forests in the country. In some areas, such an awareness may have been created already and is in fact observed to be increasing. But such areas are more of exceptions rather than the rule at the moment. A more vigorous IEC is therefore wanting.

- Overlapping functions and conflicting policies and legislation of different government agencies and LGUs
  
  This is an issue that may have some bearing on the preceding one discussed. The problem maybe more pronounced between the DENR and local government units. The latter oftentimes allow more opening up of mangrove forests for development initiatives and other projects that will generate income for them. On the other hand, the former is expected to be more circumspect in allowing the conversion of mangrove forests into some other uses. For instance, since the recent implementation of the nautical highway system in the country by the government, the DENR has received applications and/or requests for permits to cut mangrove forests in order to expand port facilities in a number of locations in the Philippines.
• Appropriateness of the existing CBFM Agreement for mangrove forests

The CBFMA is a generic agreement that has been applied across the country in all forest types. It is, however, first implemented in the uplands. The premises with which the instrument has been developed, and the underlying principles assumed in the operationalization of the Agreement as largely based on conditions in the upland regions of the country. Mangrove forests do have characteristics that are unique or otherwise different from those conditions observed in the uplands. The Community Based Resource Management Agreement for Protected Areas in mangrove forests has been patterned after the generic CBFMA. Thus, such instrument may have failed to recognize the unique conditions that are found in the mangroves which also defines the distinct relationship or interactions between families/communities and the forest/forest resources.

• Absence of policy to address existence of fully developed and productive illegal fishponds in mangrove timber lands and protected areas

In Region 7, there has been reports of fully developed and productive large fishpond areas converted from mangrove forests without permits or any form of authorization from the DENR. Apparently these fishponds have been in operation for quite sometime already and the DENR nor the LGU units concerned have not taken any move to demolish such or even issue orders for these establishments to cease from operating. It was also made evident during the consultation done in Cebu that the regional DENR units are in a quandary as to what to do in such cases as there are no firm policies in place to address such.

• Institutional constraints in the management and conservation of mangrove forests

Local government units entrusted with the management and conservation of certain mangrove and estuarine ecosystems in the country often have inadequate technical personnel to effectively and efficiently carry out the technical rigors of the job. This situation oftentimes results to the haphazard implementation of interventions which are usually stop gap measures only and are not meant to insure the long term sustainable management of the forests. There is clearly a need to beef up the manpower complement of the LGUs tasked with the management of mangrove forests or the need to provide training for such personnel.

It is also the perception that institutional collaboration in mangrove and coastal resources management is rather weak in the country. This problem is also aggravated by the differences in management priorities of agencies, organizations and LGUs with regards to the mangrove forests that fall under their jurisdiction. This concern provides evidence to the perception of relative unawareness of the 1990 MPFD or the utter disregard of the same in implementing development and/or conservation initiatives in the mangrove forests. The MPFD is supposed to provide direction to such endeavor. This means that the prioritization of activities should have been guided by the provisions of the MPFD.

2.2.2.3 Pine forests

In 1981, total pine forest coverage was estimated at 246,593 hectares. Of this area, some 243,616 hectares or 98.8% were found in public forest lands while the remaining area (2,977 hectares or 1.2%) were in A & D lands. The Master Plan also cited 1987 figures as 238,800 hectares total divided into 129,600 hectares of closed stands and 109,200 hectares of open forest. During the same year, about 2,100 hectares of the open pine forest were found in certified A & D lands. In 1997, the area covered by the pine forests was down to 227,900 hectares. Of these, 123,900 were close canopy forests while the remaining 104,000 were open canopy forests (Table 2.8). In a span of 16 years, pine forests were reduced by 18,693 hectares.

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*Includes CAR

DAO No. 18, Series of 1995 sets the guidelines for the formulation of policies for the sustainable development and management of the pine forest areas and the conservation of biodiversity. The AO sought to operationalize the pertinent provisions on the management of the pine forests as embodied in the MPFD and as emphasized in the Regional Forestry Master Plans of CAR, Regions 1 and 2. The same also established guidelines for the conduct of research within the pine forests of the country. The guidelines allow for timber extraction within the research areas located in the residual pine forests but emphasized that such should be done appropriately following the prescriptions of the seed tree method.

Among the issues identified for pine forests are as follows:

- **Forest Fires**

  Forest fire remains to be one of the destructive forces that constrain the natural regeneration and normal growth of the pine trees in the Cordilleras. This problem is even aggravated by the abnormally long dry spells that have seemingly been occurring frequently due to the El Niño Southern Oscillation phenomenon. Scientific studies have established the prolific nature of reproduction of Benguet pine and the excellent germination of seeds in natural stands. However, such successful natural regeneration of Benguet pine is often thwarted by frequent fires. There is clearly a felt need for a vigorous program on forest fire control and management in the Benguet pine forests in the Cordilleras.

  Fire is also a potent silvicultural tool in the form of prescribed burning, particularly during site preparation activities in artificial pine regeneration undertakings. This approach however creates a lot of smoke which contravenes the provisions of the Clean Air Act. Thus, the utility of prescribed burning in the area is highly limited or curtailed totally.

- **Pine forest utilization**

  The promulgation which bans the cutting of timber trees on areas higher than 1000 meters asl and on areas with more than 75% slope had serious ramifications in the Benguet pine production forests in the region. Other than heavily curtailing the economic utilization of the species, this policy initially hampered the conduct of studies that aimed to refine or improve the silvicultural system for the Benguet pine forests of the country. However, with the issuance of DAO 18, Series of 1995, reproduction cuttings were allowed if done within the purview of a research undertaking.

  This cutting restriction also put a stop to the utilization of certain species which are part of the culture and tradition among the people in the Cordilleras. In the hinterlands in the Cordilleras, the people has by nature been using certain species in a regulated manner for domestic purposes only. Such utilization is by no means destructive. The ban on cutting has seriously curtailed such utilization practices which are very much part of the Cordilleran culture.
The same policy that banned the harvesting and/or cutting of timber also seriously impaired the provisions of DAO 09, Series of 1995 that regulates forest tree seed production, collection and disposition. This AO mandated the establishment and operation of Seed Production Areas all over the country to become sources of seeds for the various reforestation programs of the government. One critical component of the Seed Production Areas is the conduct of roguing operations to remove phenotypically inferior trees from the candidate site. In the Cordilleras, this operation is deemed not tenable because of the existing ban. Potential Seed Production Areas in the region are thus left to become, at best, seed sources where collection of seeds can be done from the elite trees within the area.

The establishment of the Seed Production Areas, however, can be viewed as a development undertaking as such requires rigorous observation of scientific methods in the selection of mother trees and the conduct of operations leading to the production of superior seeds for artificial forest regeneration purposes. It may thus be possible to look at SPA establishment as a research activity. If this is so, roguing operations maybe allowed as provided for in DAO 18, Series of 1995.

- Silvipastoral practices in the pine forests

In certain areas in the Cordilleras, silvipastoral systems are practiced. Cattles are allowed to freely graze under existing stands of Benguet pine. The virtues of such production systems have fairly been established over the years. Nonetheless, what is observed to be destructive in the system is the burning of the grasses to stimulate excellent grass regeneration which is actually a common practice in the area. Those who do this practice do not adhere to the tenets of prescribed or controlled burning. What results oftentimes is that the fire gets out of control and a raging forest fire ensues.

- Ancestral Domains

The enactment of Republic Act No. 8371 known as the Indigenous Peoples' Rights Act (IPRA Law) created profound implications on the development and management of pine and mossy forests in the country. Ancestral domain was aptly defined and their coverage enunciated in the law. The law provides bias towards the legitimate claims of the indigenous peoples (IPs) and their rightful claims to their ancestral domains. The law contains certain provisions that define the extent of development and utilization of natural resources within the ancestral domains. For instance, it states that the IPs shall have priority rights and not necessarily exclusive rights, in the harvesting, extraction, development or exploitation of any natural resources within the ancestral domains. Tenurial instruments made possible under the IPRA Law include the Certificate of Ancestral Domain Title (CADT), or the Certificate of Ancestral Land Title (CALT).

The same law created also the National Commission for Indigenous Peoples (NCIP). To date, conflicts between the DENR and the NCIP over jurisdiction and responsibilities have been noted on several occasions already. Noted also were conflicts and tensions between and among holders of land tenure and holders of natural resource utilization permits or agreements. The sustainable development and management of the country's pine forests are arguably threatened by these conflicts of interests and jurisdictions.

- Lack of concern on the genetic resources of pines

As a species that is native to the Philippines, Benguet pine invariably possesses a broad range of genetic variability represented by different provenances of the species. At the moment, there are no firm efforts aimed at preserving such genetic diversity. The continuous utilization of Benguet pine trees even with the ban in force invariably means that we are losing valuable germplasm of the species. The genetic resource conservation area established for mangroves in Pagbilao, Quezon can very well be replicated for the Benguet pine species.
2.2.3 1990 MPFD Provisions

2.2.3.1 Dipterocarp Forests

Under 1990 MPFD the goal is to bring, in a practical and feasible manner, the dipterocarp forest toward a condition of sustainable yield with accompanying environmental stability for the benefit of a greater proportion of the population, in ways that are economically beneficial, environmentally sound, and politically, socially, and culturally acceptable. Among the specific objectives are as follows:

- Set aside a permanent forest estate
- Ensure the long term security of the forest estate
- Enhance forest productivity
- Improve regional, provincial, and local economic stability, and increase social equity and employment
- Enhance and maintain environmental stability
- Conserve biodiversity
- Protect and develop cultural communities

Among the strategies identified are as follows:

- Establishing a permanent forest estate
- Forest protection
- Enhancing forest productivity
- Improving regional, provincial, and local economic stability and increasing social equity and employment

2.2.3.2 Mangrove Forests

The main goal is for the mangrove resources of the country are developed and managed on sustainable basis for economic and environmental benefits of the people. Among the specific objectives are as follows:

- Preservation of the remaining mangrove forests, bringing them under effective management and enhancing their biological productivity
- Preservation of parts of the remaining mangrove areas for protection of the diversity of plant and animal life within the mangrove ecosystem
- Expansion of the mangrove forest area through reforestation and plantation development
- Effecting equitable access to mangrove areas on multiple-use – multiple user basis
- Provision of adequate supply of mangrove products and services to various end-users while at the same time conserving and expanding the resources
- Promotion of economic development in areas around mangrove resources, especially in ways that enhance mangrove protection and management
- Strengthening of institutional arrangements for ensuring sustained management of mangrove resources

Among the proposed strategies are as follows:

- Protection and management of remaining mangroves
- Expansion of the mangrove resources
- Equitable access to mangrove resources
2.2.3.3 Pine and Mossy Forests

The main goal is to bring the pine forests under sustainable management and development for the economic and environmental benefits of the people. Among the specific objectives are as follows:

- Preservation and conservation of the pine forests in the Cordilleras and the remaining Mindoro pine forests in Zambales and Occidental Mindoro
- Placing under sustainable management the remaining natural pine forests and to develop additional areas
- Effecting equitable access to the pine forest resources, especially to the communities within the pine forest areas
- Provision of adequate supply of goods and services from the pine forests to various end-users while at the same time conserving the resources
- Promotion of economic development in the pine forest areas
- Strengthening institutional arrangements for ensuring sustained management of pine forests

Among the strategies for pine forests are as follows:

- Preservation and conservation of pine forests
- Sustainable management of production forest and development of additional pine forests
- Equitable access to the management and use of pine forest resources
- Promotion of economic development in the rural communities
- Institutionalization of pine forest development

2.2.4 Assessment Of Performance/Effectiveness of the MPFD (1990-2002)

The prevailing sentiment indicates that the MPFD for the last ten years have failed in its implementation. However, its not that the various strategies called for in the attainment of the goals and objectives of the Master Plan have not been implemented. The past ten years saw policy issuances by the DENR and the conduct of certain development and conservation initiatives which are clearly parallel with the provisions of the Master Plan. These moves were made with little conscious awareness or none at all of the Master Plan and its various stipulations. To put it in another way, there was no systematic and directed implementation of the provisions of the Master Plan in the national office and the regional units of the DENR. The implementation of the Master Plan leaves much to be desired yet during the initial ten years.

There were significant efforts made in the past but it is difficult to surmise whether such were made with the purpose of attaining the goals and objectives set forth in the Master Plan. The Master Plan was made to establish and chart the direction with which development initiatives in the forestry sector will have to undertake in the future. It was able to paint a scenario of the future of forestry in the Philippines and the dire consequences that would result unless the stipulations raised by it are nurtured and implemented.

2.2.4.1 The MPFD and the Dipterocarp Forests

Events during the past ten years saw the government responding to the call for a more sustainable management of the Philippine forests in the coming years. To ensure the long term security of the dipterocarp forests in the country and to enhance its productivity, efforts were initiated to improve the implementation of the Philippine Selective Logging System and enhance the productivity and integrity of the dipterocarp production forests in the country. The conduct of TSI was enforced in residual forests covered by Community Forest Lease Agreements, Community Forest Stewardship Agreements, and Community Forest Management Agreements as far back as 1990. Log marking procedures were defined and prescribed. The shift in logging operations from old growth to secondary forests was enforced, a move
specifically designed to guarantee the integrity of the remaining old growth dipterocarp forests in the Philippines. Improvements were made in the computation of the marking goal and the annual allowable cut. Operational efficiency was a subject of several DENR promulgations and issuances which include the conduct of aerial photography by holders of TLAs, clarification of the validity period of the Integrated Annual Operations Plan and others as cited earlier in this report. The implementation of the Log Control Monitoring System which is now being perfected in the CARAGA region was definitely a move towards further protecting the forests and rationalizing the regulation of cutting and the movement of timber products from the cutting area to the sawmills or intended market of the logs. Efforts towards intensified and highly participatory forest programs have been discussed earlier in this report.

The past ten years also gave indications of the increasing emphasis on the practice of sustainable forest management system. A ban on harvesting has been made on areas higher than 1000 meters and in areas with slope of more than 50%. The NIPAS Act did that and also formed the basis for the designation of such areas in more than 1000 m and with more than 50% slope as protected areas.

Forest inventory continues to be a vital component of the Integrated Annual Operations Plan of TLAs. The high lead yarding system was discouraged in favor of methods which tend to cause less damage to the soil and the natural regenerations. The experience in SUDECOR opened a new approach to harvesting residual forests where the forest inventory prior to the cutting operations can incorporate concerns on biodiversity. The approach makes possible the generation of baseline information on the status of biodiversity in the area. Obviously, logging impacts on biodiversity can be assessed too.

The RP-German National Forest Inventory Project done in 1984 to 1988 provide the basis for the Master Plan. Currently, the ongoing Forest Resource Assessment Project will seek to provide the statistics which will serve as the backbone of a more detailed forest management planning for the different forest management units of the country. The move to transform the sampling plots into long term ecological research/monitoring plots augurs well for the sustainable management of the forest resources of the Philippines.

There is also now the Sustainable Forest Management Bill still awaiting passage in the Congress of the Philippines. The Bill seeks to provide clear direction to the management of our forests. The Bill has gone through so many congresses already and numerous deliberations on the floor.

On the dark side however, is the dismal failure in the setting aside of permanent natural forest estate which is one of the most significant strategy spelled out in the Master Plan. The DENR provided some funds which started the delineation of the boundary and its demarcation through monumenting of the Mt. Makiling Forest Reserve. It was indeed a pioneering effort but was not sustained because of lack of funds. The boundary was delineated but only a portion of the boundary was monumented.

Researches on the silviculture and management of the dipterocarp forests in the Philippines for the past ten years have not achieved much in terms of providing for the sustainable management of the same. A number of researches have been undertaken to solve the problem of propagule supply for the artificial regeneration of the dipterocarps. These researches focused on the macropropagation aspects to which certain species have favorably responded to rooting with the use of appropriate rooting hormones, rooting media and rooting environment particularly relative humidity, air temperature and moisture content of the medium. No research activities were done on natural silvicultural systems for the dipterocarps.

2.2.4.2 The MPFD and the Mangrove Forests

There were also significant strides made in the mangrove forest sector that have relevance to the Master Plan. Foremost was the expansion of the Community Based Forest Management Program to include the mangrove forests of the country in its coverage. This has been identified in the Master Plan as a viable means of establishing effective mangrove resource management in the country.
The Coastal Environment Program (CEP) of the DENR was established in April 1993 with the primary task of coordinating all programs, projects and activities pertinent to the management of coastal ecosystems in the country. The program is to be run by the Coastal Environment Program Coordinating Office (CEPCO). Five components comprise the program which include the following: (a) coastal habitats and biodiversity; (b) endangered species; (c) coastal industries and pollution; (d) resources inventory and assessment activities, and (e) research and special projects. The CEPCO is the forerunner of the present Coastal Marine Management Office of the DENR which has been described earlier in this report.

The establishment of mangrove permanent forest estates took the form of protected seascapes and mangrove wilderness areas which were created by virtue of Presidential Proclamations. Some of these have been mentioned earlier. The proclamations specifically contained the coordinates that define the boundaries of the said protected areas. However, the establishment of monuments to define the boundaries on the ground remain to be undertaken.

Mangrove reforestation projects were established in CBMFM areas and in a few reforestation projects by the DENR. To date there are no extensive plantations of Nipa whose establishment was identified as one of the key strategy of the development of mangrove forest resources in the country. There were also a few micro- and cottage-type industries established together with the CBMFM projects in various locations in the country.

2.2.4.3 The MPFD and the Pine Forests

As mentioned earlier in this report, DAO N0. 18, Series of 1995 was promulgated expressly to carry out the provisions of the Master Plan for pine forest development in the country. A Regional Master Plan for Forestry Development was also formulated taking of from the MPFD.

Community based pine forest management also became a distinct component of CBFM in the Philippines.

The ERDS-CAR also carried out researches vigorously. The research community at CAR lamented the provision of the NIPAS Act that banned the harvesting of trees in areas higher than 1000 meters. Accordingly, this provision effectively halted all researches dealing with regeneration of Benguet pine forests. The continuous assessment of the efficiency and effectiveness of the Seed Tree Method of reproducing Benguet pine was put to a compromise because of this prohibition. There were a number of researches that sought to find cost effective methods of revegetating and/or rehabilitating mine tailings pond as well as those ravaged by the open pit mining. Studies related to biodiversity in the pine forest and mossy forest ecosystems were also carried out.
2.3 Plantation Assessment

2.3.1 Introduction

Tree plantations may reduce the problem of deforestation. In addition, tree plantations restore degraded land, fight climate change, improve local livelihoods, return good profits, create employment and bolster national economies (ITTO, 2001). According to FAO data, there are more than 180 million hectares of tree plantations globally and about 4.5 million hectares of plantations are being established each year. In the Philippines, about 540,000 hectares of forest plantation were established from Industrial Forest Management Agreement/Industrial Tree Plantation Lease Agreement (FMB-DENR, 2000). Whether or not these plantations are in good shape, it remains to be seen. However, many are called “paper” plantations not because that is their eventual end-use but because it’s the only place they exist; in the field they have died of (a combination of) drought, sabotage, pest attacked, fire or some other form of neglect (ITTO, 2001).

The FMB believes that 12 million hectares or about 40 percent of total land area should be ideally being forest cover. If the existing 5.4 million hectares is subtracted from those 12 million hectares, some 6.6 million hectares still need to be reforested/planted. Of these 6.6 million hectares to be reforested/planted, the National Forestation Program (NFP) has targeted 1.4 million hectares by the end of the year 2000. Of the national target, 700,000 hectares are to be industrial tree plantations, of which 490,000 hectares (70 percent) are targeted for development by the private sector; 350,000 hectares by timber licensees (TLA) through IFMA and 140,000 hectares by ITP/IFMA and tree farm lessees.

2.3.2 Evolution and Brief History of Reforestation in the Philippines

Reforestation is the bringing in of crop cover, usually arborescent plants, in once vegetation-rich but now vegetation-bereft lands, include ecological reforestation and economic reforestation or their combination. Reforestation also includes new planting, assisted natural regeneration and enrichment planting. Reforestation in the Philippines started in 1910 with the opening of the Forest School at Los Banos, Laguna. Through Act No. 2649 in 1916, the first reforestation project was opened outside Laguna, in friar lands located in Talisay-Minglanilla in Cebu with a modest P10,000 was released. Later, other reforestation projects were opened (e.g. Caniaw, Nasiping, Paraíso, etc.) To ensure a permanent source of fund for reforestation, the new Republic government in 1944, through RA 115, imposed a reforestation fee of 50 centavos and 40 centavos on every cubic meter cut in the 1st and 2nd group and 3rd and 4th group of species, respectively. In 1960, the Reforestation Administration was created under RA No. 2706. It attained an average rate of 10,000 hectares planted annually and even reached 35,400 hectares in 1963. Reforestation projects increased in number from 57 in 1960 to 91 in 1972 with a total of 182,000 hectares planted. In 1972, the Reforestation Administration was integrated with the Bureau of Forestry, Parks and Wildlife Office and Southern Cebu Reforestation Project under PD No. 1 and LOI No. 3 into Bureau of Forest Development (BFD).

From 1966 onward reforestation became a joint undertaking by the government through its regular and foreign assisted funding; the industrial tree plantation (later the IFMA), tree farm and agro-forestry schemes and the upland people through socially-oriented programs in which reforestation is a component such as the Integrate Social Forestry (ISF), the Community Forest Stewardship Management Agreement (CFSMA), and the Community Forest Management Agreement (CFMA). Project under PD No. 1 and Letter of Instructions No. 3 into Bureau of Forest Development

As of 1987, there were 135 regular reforestation projects under the jurisdiction of the then Bureau of Forest Development (BFD) throughout the Philippines with an aggregate area of about 1,055,000 hectares. Of these, about 263,000 hectares were already planted as of March 1986 (BFD, 1989).
The Program for Forest Ecosystem Management (PROFEM) that was launched in 1976 required the private sector including timber licensees, industrial tree farm leases, tree farmers, and the citizenry to actively participate in past reforestation programs. The efforts of both government and private sector according to records increased reforestation areas to about 560,000 hectares. However, these areas were not monitored and evaluated, hence, detailed important information about these plantations are not known or recorded particularly on species composition, ages, growth and volume?

Also, past reforestation programs before 1960 and from 1960 to 987 were beset by a number of problems such as low plantation accomplishment, low survival rate, acute lack of funds for administrative, technical and infrastructure support and unclear direction. Furthermore, many reforestation projects have been damaged due to forest fires, pest and diseases and other factors.

The main objective of past reforestation programs/activities before 1987 was unclear and focused only on watershed rehabilitation and protection. Areas reforested were both for protection and production purposes. There was no distinction between protection and production forest.

By and large, past reforestation efforts before 1990 were considered a “total failure”.

2.3.3 Assessment Performance of Reforestation

Alcala (1997) in his paper presented during the International Conference on Reforestation with Philippine Species for Biodiversity Protection and Economic Progress reported in chronological order the performance of the government in reforestation from 1930’s to 1997, as follows:

Way back in the 1930’s, about 545,000 hectares of critical forestlands as needing immediate reforestation. However, of the modest accomplishments of 28,000 hectares about 85% (23,800) were destroyed during the war.

In the 1940’s there were about 5 million hectares of open, denuded, brushland and grasslands; 2 million hectares apportioned for reforestation and 2 million hectares for agriculture and pasture. It was computed that at the rate of 50,000 hectares a year, we may be able to reforest 2 million hectares in 40 years (then by 1980). Acknowledging the importance of reforestation, RA No. 115 was legislated as early as 1947 in order to have permanent source of fund for reforestation. Furthermore, in 1960 under RA 2760 a permanent agency in Reforestation Administration under the DENR to give direction to pursuance of vigorous reforestation.

An average of 10,000 hectares a year reforestation accomplishment by the Reforestation Administration was far from the target of 50,000 hectares a year. However, during its short life ending in 1972, accordingly the agency was able to reforest a total area of about 182,000 hectares (for 12 years).

From 1972 – 1986 (Martial Law Regime of Pres. F. E. Marcos), accordingly, the government has reforested a “better-than-before” rate at 27,000 hectares per year by the government and 24,000 hectares per year of reforestation by the non-government or private sector primarily the TLA-holders.

Arithmetically, by the end of 1985, the total area reforested should have been 780,000 hectares.

For the first three years (1986-1988), the Aquino Administration, the annual reforestation rate by the government was 28,000 and for the next three years (1989-1991), because of the ADB and OECF Japan loans, the annual rate increased to 105,000 hectares while the private sector achieved a yearly rate of 28,000 hectares.

Thereafter, up to 1995, the first three years of the Ramos government, annual reforestation rate by the government diminished to 17,500 hectares because of the exhaustion of the foreign funds, while the private sectors at 26,000 hectares.
Again, arithmetically it can be noted that by the end of 1995, about 1.5 million hectares were reforested, exclusive of the plantings done by the communities.

According to the MPFD (1990), up to 1987, the reforestation accomplishment totalled 847,000 hectares (587,000 hectares by the government and 260,000 hectares by the private sector). Indeed if we added the reforestation achieved in a short period of 8 years after 1987, which was close at 710,000 hectares to all the previous years of reforestation efforts, the same figures of about 1.5 million hectares of lands reforested would be achieved.

The area reforested by the government and private sector is presented in Table 1.2. Little wonder then that reforestation/tree planting is proving to be a popular pastime. If one looks closely the 2001 Statistics of the DENR/FMB about 1.5 million hectares have been established during the last 60 years. Whether these plantations are still there and in good shape or not remains to be proven. Many of these plantations are not in good shape. Some of these plantations are called “paper” plantations not because that is their eventual end-use but because it’s the only place they exist; in the field they have died of (a combination of) drought, sabotage, pest attacked, five or some other form of neglect.

### 2.3.4 Relevant Laws, Rules and Regulations

- Presidential Decree (PD) 705 dated May 19, 1975, (Revised Forestry Code of the Philippines, as amended by PD 1159).

  Provision of PD 705, as amended by PD 1159 defines the basic policy of Government on the establishment, development, and maintenance of forest tree plantations. Guidelines governing the establishment and development of industrial tree plantation (ITP), tree farms, and agroforestry farms are provided in order to attain this purpose. In this context, ITP is defined “as any forestland extensively planted to tree crops primarily to supply raw material requirements of existing or proposed wood processing plants and related industries”. Tree farms, “refers to any small tract of land purposely planted to tree crops”, while agroforestry is defined “as the sustainable management of land which increases overall production, combines agricultural crops and forest trees and/or animals simultaneously or sequentially, and applies management practices which are compatible with the cultural patterns of the local population”.

  Section 33 of PD 705 defines lands to be reforested. The areas shall be reforested and covered with suitable and sufficient trees as follows:
  - Bare or grass-covered tracts of forestlands;
  - Brushlands or tract of forestland generally covered with brush which need development;
  - Open tracts of forestlands interspersed with patches of forest;
  - Denuded or inadequately-timbered areas proclaimed by the President as forest reserves and reservations as critical watersheds, national parks, game refuge, bird sanctuaries, national shrine, national historic sites;
  - Inadequately stocked forestlands within forest concessions;
  - Portions of areas covered by pasture leases or permits needing immediate reforestation; and
  - Riverbanks, easements, road right-of-ways, deltas, swamps, former riverbeds and beaches.

- Executive Order No. 725 dated September 9, 1981.

  Executive Order No. 725 was promulgated to facilitate the establishment of ITP to facilitate the country’s reforestation efforts and promote ecological balance and adequate wood supply for the needs of the country. Section 10 of this EO provides that ITP Lease Agreement shall be for a period of 25 years renewable for another 25 years provided the lessee has complied with the terms and conditions of the lease agreements and with other existing laws, rules and regulations. The revised regulations and guidelines governing the establishment and development of ITP based PD 705, as amended by PD 1559 and Executive Order No. 725 are provided under DENR Administrative Order No. 1, Series of 1989. In addition, the revised regulations and guidelines on
ITP provides for: a) statement on areas not available for ITP; b) maximum area that may be granted for ITP; c) disposition of available area; d) application requirements and qualification of applicants; e) government incentives; and e) general provisions for monitoring and control including provisions for the cancellation of the lease.

- **Administrative Issuance’s**

  To ensure adequate supply of timber and other forest products at the same time encourage private sector participation, the government designed the industrial/corporate scheme of forest plantation development as provided under DAO No. 60, Series of 1993 and DAO 97-04, Series of 1997.

  Industrial Forest Management Agreement (IFMA) is an agreement entered into by the DENR and a qualified applicant which grants sole and exclusive privilege to the qualified applicant to develop a specific forestland into a forest tree plantation, harvest and utilize the planted tree crops pursuant to existing laws, rules and regulations. The agreement lasts for 25 years renewable for another 25 years. The IFMA covers a minimum area of 500 hectares and the maximum area is 40,000 hectares.

  Socialized Industrial Forest Management Program (SIFMA) is another type of agreement entered into by the DENR and a qualified applicant the right to develop and manage a small tract of forest land and utilize the forest products plated therein. Primarily, IFMA is issued to have more equitable access to forest resources to small landowners and to generate additional sources of income and livelihood and help poverty alleviation in the uplands.

  Under DAO No. 16 Series of 1992, the Private Forest Development Agreement can be issued by the DENR to a private landowner or his duly authorized representative for the establishment of tree plantation within his private property. The PFDA has duration of 25 years renewable for another 25 years.

  - DENR Administrative Order No. 96-29 (Community-Based Forest Management Program)

- **The Community-Based Forest Management Program (CBFMP)** integrates all people-oriented forestry programs of the government including the Integrated Social Forestry Program (ISFP), Upland Development Project (UDP), Low-Income Upland Communities Project (LIUCP), Regional Resources Management Project (RRMP), Integrated Rainforest Management Project (IRFP), Forest Sector Project (FSP), Coastal Environment Program (CEP), and the Recognition of Ancestral Domain/Claims.

- **Plantation Development vis a vis Other Laws**
  Among the issues identified by Duenas, 2000 vis a via IPRA are as follows:
  - Implementation of certain provisions in RA 8371, that has something to do with the management of natural resources and ancestral domains/lands. The constraint affecting this issue is the existence of a case filed at the Supreme Court of the Philippines for the contentious provisions of RA 8371 that has something to do with the management, ownership and utilization of natural resources and ancestral lands/domains which is still pending.
  - Contracting a reforestation project by a non-IP into their ancestral domain areas. This constraint is caused either the insincerity or non-adherence in the implementation of set guidelines on reforestation and permits issuances for rattan.
  - Non-recognition of DENR officials, particularly the PENRO’s and CENRO’s on the ancestral domains/lands of IPs. The constraint identified is the non-enforcement of measures for violations of local personnel.
o Issuance of rattan permit by non-IP in CADC awarded areas. The constraint identified is the absence of a Memorandum of Agreement (MOA) between National Commission on Indigenous People (NCIP) and DENR to define roles and responsibilities in the implementation of pertinent provisions of RA 8371 relating to ancestral domains/lands and natural resources;

o Absence of formal areas of cooperation or partnership between DENR-NCIP as regards to the management of ancestral domains/lands and natural resources, transfer of technology and other related programs/projects for IPs that has to do with research, education, facilities, training and extension programs. The constraint identified is the absence of a mechanism/facility to institutionalize the participation of IPs in the barangay development affairs specifically for forest resources and related activities;

o Weak coordination between the LGU with its IP constituents particularly in the management and regulation of forest resources and extension work. The constraint identified is the weak or absence of a regular monitoring by DENR for PENRO/CENRO/Forester’s activities in IP areas.

On the other hand, GAYO (2000), also identified several barriers to investments in tree farming, e.g. land tenure (unclear rules on public lands, uncertainty under CARP for private and commercial lands); problem on financing (lack of long-term financing; lack of bank’s appreciation of the tree farming industry; transport/logistics (high informal taxes, too many checkpoints and “cash points”; poor infrastructure; high shipping cost); poor production particularly dissemination of technologies and inadequate technical and managerial skills; and others such as law and order situation in some areas (particularly in Mindanao); limited research, development and extension services.

2.3.5 Accomplishments vs. Targets

Accordingly, the MPFD is an ambitious, gigantic Plan to solve the totality of the problems of the forestry sector in 25 years. Lacking in prioritization, it has many programs invariably un interconnected, which makes it very difficult to make an honest and factual assessment (Bernas. 2000).

Assessments on accomplishment under Forest Plantation Development cannot be done properly because Forest Plantations and Tree Farms (FPTF) are integrated with other major sub-sector programs. FPTF is one of the five- (5) component programs under Forest Management and Products Development Programs (FMPDP). Also, it was noted that most the People Oriented Forestry Programs (POFP) has included other program components such as plantation development, watershed management and biodiversity conservation.

Plantation forests include all those plantations developed for economic (production) and ecological (protection) purposes. Reforestation and plantation areas according to the MPFD are taken here to mean the same thing. The areas identified as “plantation areas”, therefore include those areas reforested by the government (DENR & OGA) including regular reforestation and special projects and non-government sector (i.e. timber licensees, IFMA, SIFMA, CBFMA, TFLA, PLA, ITPLA, and TF). Tree farms (TF) are those developed by small landholder in private lands.

Plantation development implemented by the government through foreign-funded or assisted projects is included along with other activities. As such it is very difficult to segregate/classify the funds utilized solely for plantation development. By comparing the MPFD physical targets for forest plantations and tree farms from 1991 to 2000 from the plantations developed by various sub-sectors (e.g. FLMA (contract reforestation), IFP/TLA/TPSA, CBFM and Agroforestry/Tree Farm, it appears that the accomplishments are less than 50% (0.4 million hectares against the target 1.3 million hectares). This confirms also the result reported by Tesoro (2000) and Quintana (2000). The plantation development implemented by the government was funded by ADB, which provided a loan of US$ 25 million.

The MPFD also envisioned that the private sector would be developing from 1991 to 2015 over 500 thousand hectares of tree plantation or about 20,000 hectares yearly that will be the future source of its raw materials. However, records showed that there was no significant industrial tree plantation development during the present Administration.
2.3.6 Program Impacts

From 1991-2000, the program was able to manage about 5.5 million hectares benefiting about 355,000 families. In addition, the management of about 5.5 million hectares of forestlands by families and communities saves the government in forest protection costing about P127 million annually. One important influence of Community-Based Forest Management program is the development of Alienable and Disposable (A & D) lands into forest plantations and tree farms.

2.3.7 Issues, Problems and Constraints

Several relevant issues, problems and constraints (crosscutting policy and legislation), including technical and information/research and development were identified confronting and affecting the successful and efficient implementation of forest plantation development in the country. These issues/problems were initially identified during the initial workshop in October 2002 and meetings with concerned officials of the DENR, forest industry and stakeholders concerning the implementation of the MPFD. There’s a general consensus that there is lack of interest by the private sector/other stakeholders to participate in plantation development mainly on the following concern/problems:

- Not enough provisions for economic incentives particularly on the security of land tenure and exemption from forest charges; and some obstacles particularly on accessing forestlands (because of high application fees, cost of surveys and mapping, and cost of protection against encroachers) in plantation development.

- Some technical problems identified include the following:
  - Poor species selection procedure e.g. disregards for wood quality/end use and little attention to species site compatibility. Also, there is overemphasis on exotic species.
  - Absence of a scientific yet practical and systematic national Site Classification Scheme.
  - Poor nursery management practices
  - Lack of integrated approach to deal with forest plantation pests and diseases (it should start in the early stage of plantation design).
  - Poor plantation development practices (from site preparation to pre-harvesting) and neglect of basic silviculture practices.

- Over-enthusiasm on high technology e.g. biotechnology; tissue culture, clonal forestry yet the basic program on forest tree improvement (production of improved/quality seeds and source of selected clones for mass propagation) has been neglected.

- Research and development in nursery and plantation development are still fragmented and not prioritize.

- Lack of inventory of existing forest plantation and reliable growth data.

- Difficulties in harvesting and transporting plantation products;
  - Forest products cannot be harvested without prior forest inventory. The present requirement of the DENR requires a 100 percent inventory of the area prior to issuance of permit to harvest the trees.
  - Harvested logs cannot be sold without Certificate of Origin (COO) from the DENR.
  - Intervention of the local government units in imposition of taxation, documentation of forest products.

- On wood processing, the present policy of the government makes it very difficult to buy and install processing mills. Installed mills are hard to operate owing to restrictions on sourcing raw materials and transport of processed lumber products.
Similar problems are encountered in marketing of forest plantation products. The government has no guidelines for prices and grading rules of “chain sawn lumber” or regular sawn lumber to compete with international markets. Additional problems include:

- Lack of database on production technology and market price,
- Lack of market linkages for some timber and forest products, unfavorable mode of payment,
- Price manipulation by middlemen,
- Poor conditions of “farm to market” roads,
- No market outlets for some plantation species,
- Unstable market, policy and raw material price.

There are several institutional obstacles that were identified affecting forest plantation development. Some institutional concerns are presented as follows:

- There is need for a common definition of some forestry terms, e.g. forests, forest plantation/tree plantation, watershed, reforestation/forestation, protection forests, and production forests.
- Conflict and overlap of jurisdiction on forestland use; whether or not to exclude/include the second growth forests as protection forests and refine process of prioritizing site to be declared as priority conservation areas.

- Weak enforcement of forestry laws in the field.
- Absence of an institution that will oversee the effective implementation of forest plantation development and continue the implementation of forest tree improvement program in the country.
- Forest plantation development not properly funded or funds appropriated for the purpose are not properly used. For private plantations, very expensive capitalization.
- Lack of financial support from private and government financial institutions.
2.4 Protected Area System

2.4.1 Introduction

A complex of mix ecosystems and habitat types characterizes the Philippine landscape. Many of the islands are believed to have a very high degree of plant and animal endemism. Philippines is one of the most important countries in the world for conserving diversity of life on earth. It is one of the 17 mega diversity countries with more than 52,170 described species, of which half are found nowhere else in the world. However, less than 6% of the country’s original forest cover remains, while 418 species are listed in the 2000 IUCN red list of threatened species, making Philippines to the top of the 25 global bio-diversity (and coral reef) hotspots (Manila Bulletin, Sept.13,2002 p 9).

The most important policy instituted on IPAS and biodiversity conservation is RA 7586 (NIPAS Act of 1992) and its implementing rules and regulations, DAO 25 of 1992. This Act establishes a comprehensive system of integrated protected areas within the classification of national parks.

As of 2001, the DENR had recognized 244 protected areas under NIPAS (Including 137 key conservation sites), with a total area of about 3.2 million ha. Most remaining virgin 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 PAs, at the moment are the responsibility of DENR’s regional offices. The Protected Areas and Wildlife Bureau (PAWB) provides staff support to the field offices.

Any sort of utilization activity is prohibited in parks and reserves, but most if not all these areas are in a sad state of degradation owing primarily to illegal cutting and kaingin making. This has been the result of inadequate physical protection of the areas. There are local communities and indigenous people living in and around protected areas. There is need to enhance and strengthen the PA system. Work in this regard are being undertaken by four foreign-assisted projects, which together cover 18 PAs having a total area of 1,308,766 ha.

Details/scope of activities and period covered in respect of the foreign-assisted projects and the quality of work undertaken need to be verified to get a clear indication of accomplishments. In the mean while, Conservation International, the Washington-based International NGO, along with relevant agencies in Philippines has come out, in September 2002, with a new set of Philippines Biodiversity Conservation Priorities(CI, 2002).

There are several legal instruments relating to PAs and wildlife management: (i) Wildlife Local Transport Permit, (ii) Wildlife Collectors Permit, (iii) Wildlife Farm Permit, (iv) CITES/ Non-CITES export/import/re-export permits, (v) Scientific Researches, and (vi) Certificate of Wildlife Registration. There are many rules and procedures under each of these main instruments. Non-compliance, however, is a serious issue. Not much has been done to address the people-PA conflicts; it is necessary to involve local communities in PA management, as is done in some countries.

2.4.2 Issues

Among the issues identified under the protected area subsector are as follows:

- Inadequate skills and knowledge, i.e. species identification and inventory
- Lack of ground demarcation of forest lands, e.g., production areas, protection areas, restoration areas
- Lack of protection of residual forest which biodiversity rich areas
• NIPAS Act and IPRA Inconsistencies
• Biological pollution
• Need for habitat rehabilitation
• Extinction of species and genetic resources
• Severe disturbance in ecological and evolutionary process
• Erosion of Indigenous Knowledge
• Management constraints
• Local Interest, rights concerns
• Development Potential
• Access and Benefit sharing from FBD
• Management of biodiversity zones/areas outside PAs

2.5 Grazing and Pasture Land Management

2.5.1. Introduction

Grazing and pastureland management (or range management) is one of the 4 components under the “Soil conservation and Watershed Management Program” of the Master Plan for Forestry Development (MPFD 1990). As per PD 705, grazing lands refer to “that portion of the public domain which has been set aside, in view of the suitability of its topography and vegetation, for raising livestock”. Legally, these areas are under the administration, management and disposition by the Forest Management Bureau, although the authority is now decentralized to the DENR regional offices. The terms grazing land, pastureland and rangeland are synonymous and used interchangeably in the literature. For this report, grazing land will be the term to be used.

Grazing lands are commonly located within classified public forest zones which evolved from the gradual depletion of previous climax forest vegetation due to destructive logging, kaingin and other land use conversion activities. In the Philippines, grazing lands are dominated by different grass communities such as cogon (*Imperata cylindrica*), bagokbok or samsamon (*Themeda triandra*), Misamis grass (*Capillepedium parviflorum*), amorseco (*Chrysopogon aciculatus*) and talahib (*Saccharum spontaneum*) depending on site quality or degree of site degradation and grazing management history (Aguilar 1995). More than 50% of grasslands are severely eroded, consequently degrading the soil to become acidic, shallow, and deficient in N, P and other nutrients (Concepcion and Samar 1995). As a result, the carrying capacity of the native grasslands is considered very low at 0.5 animal unit (au) per hectare. The introduction of high yielding grasses and nutritious legumes is believed capable of increasing the carrying capacity to 3 au/ha (Castillo 1991; PCARRD 1993, 2001).

The statistics on area covered by grasslands in the Philippines vary. The DENR estimated grassland cover at 1.5 M ha (Malvas 1995), DA at 6.5 M ha (Concepcion and Samar 1995), and PCARRD with 5.1 M ha estimate (PCARRD 1982). The variation maybe attributed to differences in their basis of estimation. It is likely that DENR’s estimate is based on public lands which it has jurisdiction, while DA and PCARRD included both public and A&D lands.

Since the enactment of the 1939 Pasture Land Act, vast tracts of grazing lands were awarded by the government to private ranchers for livestock production (mainly cattle) through pasture lease agreement (now called forest land grazing management agreement or FLGMA) or pasture permit. The total number and area of lease agreements and permits have steadily declined through the years due to abandonment, cancellation and/or non-renewal of the leased areas (Table 2.8). The latest data (2001) shows that there were only 407 leases/permits covering 119,000 ha, down from 1,077 leases/permits covering 414,000 ha in 1990 (Forestry Statistics 2001). This is equivalent to an average “rate of loss” of about 61 leases/permits per year or about 26,800 ha/year during this 10-year period.

The decreasing trend in the number and area covered by FLGMA and pasture permit result to decreasing contribution of these cattle ranches to total cattle population and beef production in the country. As shown in Table 2.9, cattle ranches contained about 210,000 heads of cattle in 1997 (or 9% of total cattle
population), decreasing to about 178,000 heads in 2002 which is 7% of total cattle population (Bureau of Agricultural Statistics or BAS 2002). Conversely, the main bulk of cattle population are raised in the backyards, contributing about 91% and 93% of total in 1997 and 2002, respectively.

Filipinos are not really beef-eaters if compared to such countries like Argentina and Australia. The Philippines’ per capita beef consumption is only 2.6 kg/year (BAS 2002). At this rate, it is estimated that ranches contributed about 8.19 million kg of beef in 2002 satisfying the beef requirement of 3.2 million Filipinos (about 4% of total Filipino population). At P100/kg, the 8.19 million kg of beef translates to about P819 million annual contribution to the economy which is still substantial.

Table 2.8. Number and area of forest land grazing management agreement (FLGMA) and permit, CY 1990-2001. (Source: Forestry Statistics 2001)

<table>
<thead>
<tr>
<th>Year</th>
<th>Lease</th>
<th>Permit</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Number</td>
<td>Area (ha)</td>
<td>Number</td>
</tr>
<tr>
<td>1990</td>
<td>1,014</td>
<td>405,000</td>
<td>63</td>
</tr>
<tr>
<td>1991</td>
<td>941</td>
<td>360,000</td>
<td>12</td>
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<tr>
<td>1992</td>
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<tr>
<td>1994</td>
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</tr>
<tr>
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<td>1996</td>
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</tr>
<tr>
<td>2001</td>
<td>407</td>
<td>119,000</td>
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</table>


<table>
<thead>
<tr>
<th>Year</th>
<th>Commercial (Ranches)</th>
<th>Backyard</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>1997</td>
<td>209,857</td>
<td>2,056,427</td>
<td>2,266,284</td>
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<tr>
<td>1998</td>
<td>208,953</td>
<td>2,168,149</td>
<td>2,377,021</td>
</tr>
<tr>
<td>1999</td>
<td>197,224</td>
<td>2,228,705</td>
<td>2,425,929</td>
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<tr>
<td>2000</td>
<td>193,799</td>
<td>2,285,054</td>
<td>2,478,853</td>
</tr>
<tr>
<td>2001</td>
<td>188,230</td>
<td>2,307,371</td>
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<tr>
<td>2002</td>
<td>178,016</td>
<td>2,369,065</td>
<td>2,547,081</td>
</tr>
</tbody>
</table>

The beautiful landscape and the presence of various microhabitat patches within the rangelands make these areas ideal sites for outdoor recreation and habitats for distinct flora and fauna.

As one of the components of several watersheds, the grazing lands’ ecological and hydrologic importance to downstream ecosystems is enormous. If not properly managed, they can contribute a lot of soil erosion and surface run-off. For instance, it was estimated that overgrazed and regularly burned grassland contributes about 440 t/ha/yr of soil erosion as compared to only 10 t/ha/yr in undisturbed grassland. In fact, natural range grazing was estimated to be no longer profitable beyond 18% slopes if the rangeland is regularly burned and overgrazed due to the estimated increasing cost of erosion (both on-site and off-site) (MPFD 1990).

In spite of the tremendous economic and environmental importance of rangelands, there has been no significant study or policy change regarding their true resource value so that fair assessment for charging user’s fee can be made. In fact, the annual user’s fee was pegged at P1.00 or lower per hectare since the
1939 Pasture Land Act. It was only recently when findings of an ERDB study on pricing of grassland resources resulted to formulation of a policy to increase the user’s fee or economic rent (Francisco et al 2000).

2.5.2 Goal and Objectives of the 1990 MPFD for the Grazing Land Management Component

Unlike in the other program components, the MPFD did not specifically state its goal, objectives and strategies and the issues and concerns it wants to address for this sub-sector. Nevertheless, it briefly mentioned the problem of low productivity of rangelands (i.e. cattle densities not exceeding 0.3 to 0.5 au/ha) due to overgrazing and regular burning and the concomitant considerable soil erosion and site degradation. Obviously, the master plan’s intent is to put this sub-sector back to productive condition through proper management such as improved forage production and cut-and-carry feeding system to increase carrying capacity and to avoid or minimize overgrazing and regular burning practices.

2.5.3 Policies and Physical Accomplishments Vis-a-Vis MPFD Targets

2.5.3.1 Policies Related to Grazing Land Administration and Management

There are eight major policies related to grazing land administration and management (Table 2.10). The 1939 Pasture Land Act was followed by the issuance of MAO No. 50 Series 1982 after a lull of more than 4 decades. The latest major policy issuance was in 1999 when DAO 99-36, as amended by DAO 2000-23, was issued, incorporating the controversial provision that substantially increased the user’s fee as recommended based on an ERDB research findings mentioned earlier. Currently, a proposed DAO (DAO 2003) regarding the revised rules and regulations governing the administration, management, development and disposition of forestlands used for grazing purposes is under review by the DENR. This draft DAO actually tries to harmonize the sentiments of ranchers who are opposing the new user’s fee being imposed with the scientific findings and the recent policy pronouncement by President Arroyo in Masbate.

<table>
<thead>
<tr>
<th>Name of Policy</th>
<th>Year Issued</th>
</tr>
</thead>
<tbody>
<tr>
<td>2. MAO No. 50 Series 1982 (Regulations governing the administration, management and disposition of grazing lands, communal grazing lands and forest lands for grazing purposes).</td>
<td>1982</td>
</tr>
<tr>
<td>3. BFD Circular No. 12 Series 1983 (Revised guidelines in the processing of grazing lease/permit application).</td>
<td>1983</td>
</tr>
<tr>
<td>5. DAO No. 95-13 (Amending Section 16 of MAO No. 50 Series 1982).</td>
<td>1995</td>
</tr>
<tr>
<td>6. DAO No. 99-36 (Revised rules and regulations governing the administration, management and disposition of forest lands used for grazing purposes).</td>
<td>1999</td>
</tr>
<tr>
<td>8. Proposed DAO (Revised rules and regulations governing the administration, management, development and disposition of forest lands used for grazing purposes).</td>
<td>2003</td>
</tr>
</tbody>
</table>
The following summarizes the major provisions of these 8 major policies:

1) Grazing land area to be leased or given permit = 50 – 20,000 ha per applicant.

2) Tenure = 25 years, renewable for another 25 years.

3) Application fee = P1.00/ha (1983) to P10.00/ha (1999).

4) Grazing land capability survey to determine suitability and availability of grazing land being applied for:
   a) Nine criteria to be used in the assessment (biophysical and socio-economic factors).
   b) Assessment (including perimeter survey and mapping) to be done by Land Capability Survey Team to be created by the DENR regional offices.
   c) Assessment/survey fee = P2.50/ha (1983) to P300.00/ha (1999).


6) Area for forage improvement -- Each lessee is required to establish forage improvement in at least 10% of the total leased area.

7) Rental fee/user’s fee:
   a) P1.00/ha (1939-1998).
   b) DAO 99-36:
      o 5-year transition period, i.e. Y1 = P200/ha; Y2 = P275/ha; Y3 = P350/ha; Y4 = P425/ha; Y5 = P500/ha.
      o Starting Y6, user’s fee to be computed using economic rent formula.
      o 80% user’s fee reduction incentive.
   c) Proposed DAO – imposes P40/ha user’s fee (to comply with President Arroyo’s pronouncement) but it has provision stating that DENR reserves the right to set/revise the user’s fee or government share based on economic rent formula.

8) Annual Grazing Report --- required to be submitted by the lessees to DENR.

9) Performance evaluation of leaseholder’s compliance of the management plan – to be conducted by DENR every year during the first three years and every two years thereafter.

10) Grounds for cancellation of lease agreement:
    a) Violation of any of the provisions of the agreement;
    b) Non-compliance to the approved management and operations plans;
    c) Failure to submit the mandatory annual grazing report; and
    d) Failure to pay the user’s fee.

Analysis of these policies indicate two things:

There are enough provisions to enhance or safeguard sustainable grazing land management such as: a) conduct of land capability assessment to ascertain suitability and availability of the area being applied for grazing purposes; b) preparation and implementation of management and operations plans; c) issuance of the Environmental Compliance Certificate (ECC) as condition precedent to the approval of the management and operations plans; and d) regular monitoring and evaluation of lessee’s performance through the annual grazing reports and the conduct of annual/bi-annual performance evaluation.

Realization of the above safeguards depends on the capability of the lessee to implement such provisions or requirements and the capability of DENR to provide technical assistance to lessees.
from planning to implementation and monitoring and evaluation of the formulated management and operations plans.

2.5.3.2 Physical Accomplishments of Grazing Land Management Component vis-à-vis MPFD Targets

The MPFD projected a gradual decrease in area of grasslands that will be left for livestock production due to land use change – i.e. from 1.5 M ha in 1990 and 0.9 M ha in 2000 to 0.7 M ha in 2015. Based on this scenario, the MPFD envisaged that increasing areas of grazing lands have to be managed productively, perhaps to reverse the trend (Table 2.11). However, it appears now that this increasing physical target cannot be met in the coming years if the decreasing trend in the number and area of leased areas continues. In fact, by year 2005, it is projected that there will only be about 165 lessees left to manage an estimated 48,000 ha remaining grazing lands. This is 2.4 times lesser than the 115,000 ha targeted by MPFD for that particular year. And if the current rate of decrease still proceeds, there will be no more lessees to speak of by year 2010.

Table 2.11. Area of grazing lands targeted by MPFD for productive management versus the actual and projected number and area under FLGMA management.

<table>
<thead>
<tr>
<th>Year</th>
<th>MPFD Targets (ha)</th>
<th>Actual &amp; Projected Areas Under FLGMA Number</th>
<th>Area (ha)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1990</td>
<td>0</td>
<td>1,077</td>
<td>414,000</td>
</tr>
<tr>
<td>1995</td>
<td>15,000</td>
<td>722</td>
<td>257,000</td>
</tr>
<tr>
<td>2000</td>
<td>65,000</td>
<td>419</td>
<td>122,000</td>
</tr>
<tr>
<td>2001</td>
<td>75,000</td>
<td>407</td>
<td>119,000</td>
</tr>
<tr>
<td>2004</td>
<td>105,000</td>
<td>225*</td>
<td>66,700**</td>
</tr>
<tr>
<td>2005</td>
<td>115,000</td>
<td>165*</td>
<td>48,000**</td>
</tr>
<tr>
<td>2010</td>
<td>165,000</td>
<td>0*</td>
<td>0**</td>
</tr>
<tr>
<td>2015</td>
<td>215,000</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

In general, forage improvement was not undertaken or fully complied with by the FLGMA holders in spite the fact that it is their obligation under DAO 99-36 to establish forage improvement in at least 10% of their total leased area. In fact, the 482.65 ha total area with forage improvement as reported by 126 lessees (Table 2.12) means that on the average, each lessee established only 3.83 ha of his/her total leased area. If the average area per lessee is 292 ha (based on the 119,000 ha covered by 407 lessees it implies that only 1.3% of the total leased area per lessee was with forage improvement established.

Table 2.12. Total hectarage of FLGMA lease areas with forage improvements. (Source: Annual Grazing Reports Submitted to FMB – 2002)

<table>
<thead>
<tr>
<th>Region</th>
<th>No. of Lessees</th>
<th>Forage Improvement (ha)</th>
</tr>
</thead>
<tbody>
<tr>
<td>CAR</td>
<td>27</td>
<td>22.54</td>
</tr>
<tr>
<td>1</td>
<td>6</td>
<td>1.91</td>
</tr>
<tr>
<td>2</td>
<td>42</td>
<td>111.00</td>
</tr>
<tr>
<td>3</td>
<td>6</td>
<td>7.50</td>
</tr>
<tr>
<td>4</td>
<td>13</td>
<td>84.00</td>
</tr>
<tr>
<td>5</td>
<td>11</td>
<td>66.50</td>
</tr>
<tr>
<td>10</td>
<td>11</td>
<td>162.50</td>
</tr>
<tr>
<td>12</td>
<td>10</td>
<td>26.70</td>
</tr>
<tr>
<td>Total</td>
<td>126</td>
<td>482.65</td>
</tr>
</tbody>
</table>
The main reason provided by ranchers for not being able to fully implement the required forage improvement in their lease areas is due to the absence of sources of seeds or germplasm of forage crops. The forage seed production areas established by DENR in 7 different project sites are accordingly no longer operating since 1997 due to lack of funds. This is exacerbated by the lack of formal trainings of DENR range management officers in the field on range management. They do not have enough technical capability to provide the necessary assistance to lessees such as improved forage production technologies, herd management and the like.

2.5.4 Issues and Concerns on Grazing Land Management

Numerous issues and concerns were raised by Austria (1993) in his pioneering policy research (MS thesis) on the administration of public rangelands in the Philippines which are still valid today. Several issues were also presented during the series of National Grassland Congress of the Philippines (e.g. Florido et al 1998; Moog and Castillo 1995; Montemayor 1999). This consolidation of issues and concerns (including the recommendations presented in section 6) have been reiterated and validated during the interview of key informants from DENR and a leaseholder and during the regional consultation seminar-workshop held in Baguio City.

- **Institutional and Technical Issues and Concerns**
  - Low priority concern on rangeland management as compared to the traditional forest land uses like timber production, CBFM, etc. The DENR’s present organizational structure does not include range improvement as one of its functions.
  - Lack of DENR manpower (both in number and capabilities) and funds to provide necessary technical assistance to lessees and to regularly perform its regulatory and monitoring functions.
  - Lack of coordination between or among DENR, DA and ranchers.
  - Lack of technical and material assistance for range improvement (e.g. sources of seeds/planting materials for forage improvement).
  - Lack of good breeder base population. The high yielding cattle breeds used to upgrade native strains are usually imported.

- **Policy Issues and Concerns**
  - No policy change regarding user’s fee since 1939 until only recently when appropriate pricing of grassland resources was recommended resulting to non-intensive and inefficient operations.
  - Implementation of DAO 99-36 (as amended by DAO 200-23) is being opposed by many ranchers and lease applicants because of perceived very high rates imposed for several fees (application fee, user’s fee, site assessment fee, etc.) and too many requirements.
  - No land use policy allocating certain grassland and other potential areas as permanent grazing lands.

- **Biophysical/Social/Financial Issues and Concerns**
  - Biophysical constraints in grazing lands:
    - Marginal soil (acidic, low N and P)
    - Weed infestation especially by *Chromolaena odorata* and *Lantana camara*.
    - Low herbage yield of native pastures (can hardly support 0.5 au/ha)
    - Long dry season/El Niño phenomenon (cause seasonal shortage of forage)
  - Social and financial constraints:
    - Squatting, rebel problem, ancestral land claim, cattle rustling, incendiaryism, vandalism, and illegal cutting of trees/charcoal making.
    - Unfavorable peace and order condition is accordingly the main reason why grazing leaseholders are forced to abandon their ranches.
- High cost/lack of high quality cattle breeders.
- High cost of fencing materials, feed supplements and other ranch structures required (high initial investment cost required).
2.6 Urban Forestry

The 1990 Master Plan for Forestry Development (MPFD) included Urban Forestry Program as one of the five component programs under the umbrella program “Programs on Man and the Environment”. It defined urban forestry (UF) simply as “a forest park, a nature center, a boulevard lined with trees or flowering plants or even coconuts, a street with trees and other green plants in the islands or sidewalks, a vacant lot planted to trees and other green plants, a school or hospital or a factory yard with trees. In short, urban forestry is a greening movement, a people-oriented forestry designed to raise the quality of environment of the people in urban centers”.

Land, water and air pollution and space congestion have become very critical in at least 4 big cities in the Philippines. These include Metro Manila, Metro Cebu, Davao and Cagayan de Oro. The rapid degradation and deterioration of the quality of the environment in these urban centers result to health hazards to the residents. Everyday, large quantities of CO\textsubscript{2}, CO and other toxic gases are spewed into the air from factories, manufacturing firms, transportation, burning by residents themselves. This is aggravated by noise pollution from engines and horns of motor vehicles. The influx of people from rural areas in these urban centers results to overcrowding of side walks, canals, railroad shoulders, underneath fly-overs, bridges and any conceivable vacant space. For instance, it is estimated that there are about 10M people in Metro Manila, 30 – 40% of whom live in squatter areas (Nakanishi, 2001). The voluminous solid wastes generated by the residents, improper wastes disposal and the lack of basic sanitary facilities of squatter colonies contribute to the worsening health and sanitation problem.

In order to mitigate these environmental problems, establishment and maintenance of urban forests is one of the interventions sought. Among others, the trees and other green plants absorb CO\textsubscript{2} and gives off O\textsubscript{2}, hence they mitigate or lessen pollutants from the atmosphere. They also provide shade, serve as buffer against noise and air-borne dust and conserve water and soil. Ganapin (1993) comprehensively discussed the different roles and benefits of urban trees to environmental enhancement categorized under 3 different uses: climatological, engineering, and architectural/aesthetic uses.

2.6.1 Goal, Objectives and Strategies of UF Program under 1990 MPFD

The goal of the program is the rehabilitation of the environment in urban centers. Specifically, as defined in the MPFD (1990), the medium term (10 – 15 years) goal is to attain active practice of UF in cities and towns.

Its objectives are as follows:

a) to establish tree strips and forest parks to help in reducing air, noise and sight pollution and in improving air temperature in urban area and to attain a tree to person ratio of 1:4; and
b) to contribute to physiological and psychological well – being of urban residents.

The following are the strategies to attain the goals and objectives of UF program:

a) establishment of mini-forests and nature parks;
b) greening of main thoroughfares, side streets and islands;
c) establishment of city/municipal/school nurseries;
d) enlistment of participation of LGUs, NGOs and other government agencies in planting trees in school grounds, military camps, hospital compounds, etc;
e) provision of tax incentives to encourage owners of vacant and idle lots to plant trees;
f) initiation of an intensive information campaign on the benefits derived form urban forests; and

g) enactment of laws and local ordinance directed towards urban environmental
Due to funding constraints, the MPFD initially targeted the following six heavily polluted and/or congested cities for UF development: Metro Manila, Cebu City, Davao City, Cagayan de Oro City, Iloilo City and Zamboanga City.

The components of the program include the following:

a) **Urban forest and nature parks development** - Mini-forests and parks are targeted to cover 1-5 ha per forest or park depending on availability of area. Depending on the population, the target is to establish 1 park per 100,000 – 150,000 residents at strategic locations in population centers. The species composition will be mostly forest trees with emphasis on ornamental, fruit-bearing (including feeding tree) and shade trees. Species will be selected based on soil, climate and resistance to pollutants.

b) **Grounds landscaping (compound planting)** - This involves planting of trees and other plants in compounds/grounds of schools, government offices and hospitals, military camps, compounds of factories and commercial establishments including subdivisions.

c) **Greenbelt development (roadside planting)** - This project involves greening of main thoroughfares, side streets and roads. It is to be a joint undertaking of LGUs, DENR and NGOs. In the preparation of overall urban forestry plan for each city, the main streets and roads to be planted will be identified.

The following support components should be considered in UF program planning and development:

a) **Policy and legal reform** - Zoning should be incorporated in the city plan (e.g. placing industries in city outskirts to reduce pollution within the city).

b) **Institutional strengthening** - In order to oversee and coordinate the urban forestry program in the city, an Urban Forestry Division should be created in the Forest Management Service sector at the regional or PENRO offices of DENR similar to the one created at FMS – NCR.

c) **Human resource development** - Due to limited expertise and practical experience on UF in the country, there is a need to conduct training in UF especially for DENR and LGUs who will be implementing the program.

d) **Research and Development** - UF research is needed on: 1) effects of different pollutants on physiological processes, growth and survival; 2) species – site compatibility; and 3) care and maintenance techniques in an urban setting.

e) **Information dissemination** - A public information campaign (e.g. through mass media; including teaching the values of trees as one of the topics in science subjects in elementary grades) is needed on the importance of trees in urban areas so people will be sensitized not to vandalize or injure the trees planted.

### 2.6.2 Assessment Results

#### 2.6.2.1 Policies and Programs Related to Urban Forestry Development and Management

There are several policies, programs and projects issued and implemented for the past several decades which is an indication of continuing concern on the deterioration of urban environment. It is noticeable that new policies and programs evolve whenever there is a change in administration (a common phenomenon in the Philippines) indicative of lack of continuity of previous initiatives.
The major policies and programs related to urban forestry are chronologically listed below:

- **PD 1153** of Pres. Marcos dated 1976 (Tree Planting Decree to support PROFEM)
  - Requires all able-bodied Filipinos 10 years old and above to plant a tree per month for 5 consecutive years.
  - Certificates of planting and survival--- requirement for graduation from school, renewal of job appointment and business permit and approval of retirement from service.
  - “Halamanan ng Bayan” launched by MHS to support this program. It required each city or municipality to put up a nursery, garden and park.
  - Repealed by EO 287 dated July 25, 1987 because of dictatorial provisions and harsh penalty.

- **PD 953** of Pres. Marcos dated July 6, 1976 (Greening of Private Lands Including Residential Subdivisions)
  - Requires private landowners to plant trees extending at least 5 m on each side of the rivers/creeks.
  - Developers or owners of residential subdivisions and commercial/industrial lots to set aside 30% of total area as open spaces for parks and recreational areas.
  - Penalizes unauthorized cutting, destruction or injury inflicted on naturally-growing or planted trees or vegetations in any public places.

- **LOI 1312** of Pres. Marcos dated April 23, 1983 (Establishment and Development of Local Government Forest or Tree Parks Throughout the Philippines)
  - Requires each barangay, municipality or city to establish and maintain at least one forest or tree park of considerable size.
  - MNR (now DENR) to allocate public lands for this purpose and to provide technical assistance and seedlings needed.
  - MHS to ensure that establishment of forest or tree parks is included in the land use plan of each barangay, municipality or city.
  - MILG (now DILG) to appropriate funds and implement establishment and maintenance activities.

- **Memo Order Nos. 198 and 199** of Pres. Aquino dated November 9, 1988 (Luntiang Kamaynilaan Program (LKP)/ Hardin ng Bayan Program).
  - Issued to help insure healthy environment in Metro Manila (MM) and to serve as model program for other cities/municipalities.
  - Anchored on the “Hardin ng Bayan” concept wherein each city or municipality should have gardens or parks of their own, transforming MM into a garden metropolis with lush vegetations, cool and fresh air like the countryside.
  - Objective- to plant 2 million trees in 2-3 years and achieve a desired 1:4 tree-man ratio.
  - For efficient, effective coordinated implementation, an Inter-Agency Committee (IAC) was formed: Co-chair- DENR and MMA (now MMDA); members- DPWH, DOTC, Metro Police Force, DOT, OPS and PMS.

- **Memo Cir. No. 5** of Pres. Ramos dated August 27, 1992 (Clean and Green Program).
  - Similar to LKP (same IAC composition except MMDA as chair/lead agency) but wider in scope (not only greening but also cleaning activities)
  - Objective- massive planting (0.5 million trees/year or 2.5 million trees in 5 years from 1993-1997) to achieve the ratio of one tree for every 4 persons.
Although focused in MM, CGP has nationwide coverage and encouraging cities and municipalities to join nationwide contest for cleanest and greenest city or town.

  - Scope / Objective – regreening and rehabilitation of all open and denuded lands of public domain, idle lands, private lands and other suitable areas (both urban and rural) including rehabilinations of coastal and marine areas.
  - DENR to identify, assess and designate suitable area for planting and management and to provide technical assistance to participating agencies.
  - LGUs implement the program in their respective level and set up counterpart funds.
  - Private sector participation encouraged via MOA or other appropriate arrangements with DENR.

- EO No. 118 of Pres. Ramos dated August 12, 1993 (Mandating the active participation of all government agencies nationwide in urban greening through an Adopt-A-Street/Park Program)
  - Objective – greening of streets and parks in urban centers.
  - Requires all government offices and government owned/controlled corporations to adopt a street or park in coordination with concerned LGUs, NGOs and private sector by planting appropriate species and maintaining them for at least 5 years using their own funds/resources.
  - DENR to manage and coordinate the program through a designated National Coordinator.
  - Project to be turned over to concerned LGU for maintenance and protection.

- DENR-DILG-DPWH-CSC Joint Memorandum Circular No. 1 dated December 17, 1993 (Implementing Guidelines for EO 118-Adopt-A-Street/Park Program)
  - Described the roles of each participating agency and outlined the schemes in the identification, selection and adoption of a street or park to be developed.
  - DENR to provide assistance to “adopters” in selecting suitable streets or park sites, in providing necessary planting materials and in monitoring performance.

  - Conceived as a component of “Lets Go Green Program” of former DENR Secretary Antonio Cerilles.
  - Application of appropriate silvicultural treatments (e.g. removal of nails, wires/cables, water sprouts; surgical treatment of injured stem or root) to prolong life span and promote good health and vigor of trees planted in parks and along thoroughfares and streets in MM.
  - Supplemented by public awareness campaign.
  - DENR enters into MOA with participating agencies (e.g. subdivision homeowners association, city/ municipal government, NGOs, etc.)
  - DENR’s role --- conduct inventory and assessment of damaged/injured trees; undertake appropriate silvicultural treatments; conduct information dissemination and training on tree care and maintenance; provide technical assistance and planting materials to sustain the project.
  - LGU’s role --- provide tree care and maintenance crews to sustain the project; assist DENR in information dissemination on maintenance and protection of trees.

- Proclamation No. 396 of Pres. Arroyo dated June 2, 2003 (Enjoining the active participation of all government agencies including government-owned or controlled corporations, private sector,
schools, civil society and citizenry in tree planting activity and declaring June 25, 2003 as Philippine Arbor Day).

- Objectives: to promote multi-sectoral participation in tree planting nationwide; to develop greater awareness on the importance of trees in environment, health and human life.
- Participating agencies, LGUs, schools, etc. to identify areas to be planted in coordination with agencies which have jurisdiction over such areas e.g. DENR in case of public lands, LGUs in areas within their jurisdiction, DND for military lands reservation, DOT for ecotourism areas, etc.
- DENR, LGUs and schools --- to establish and maintain nurseries.
- Respective participating agency/instrumentality --- to maintain and protect the planted seedlings.
- DENR --- to provide technical assistance to all participants.

In general, the following goals and objectives are common to the Urban Forestry (UF) policies and programs described above (Palijon 2000):

- to provide/maintain green, clean and beautiful environment;
- to promote public awareness on the importance of trees (promote environmental consciousness);
- enhance people’s participation in the program;
- promote multi-sectoral collaboration, cooperation and support; and
- in the case of LKP and CGP, the specific objective is to attain a 1:4 tree to person ratio to sustain ecological balance.

As strategy to enhance successful implementation of the project, DENR is usually tasked to provide technical assistance in planting, site and species selection, and maintenance operations, including provision of the planting stocks. Understandably, the DENR is also looked up to as the lead agency when inter-agency collaboration is involved in the program. On the other hand, the city, municipal and barangay governments, which have jurisdiction over the project site, are usually tasked to maintain and protect the tree parks established and streets planted. They are also required to provide counterpart funds and other resources needed for these projects.

At the end of each program, there seems to be no serious post-project accounting or evaluation of outputs and accomplishments, including evaluation of success and failures. This may be attributed to the fast rate of turn-over of urban forestry/greening programs being implemented. Another reason may be lack of manpower and resources to monitor all the projects. For instance, in the case of Metro Manila, the Urban Forestry and Law Enforcement Division Office of FMS – NCR/DENR only has a small unit (Cooperative Planting Unit) under the Urban Forestry Section which is tasked to do the monitoring activities. Needless to say, the synthesis of lessons learned is an important input for planning and formulation of new programs (i.e. we do not have to “reinvent the wheel” so to speak).

### 2.6.2.2 Specific Offices/Units In-Charge of Urban Forestry/Green Space Development and Management

To develop, implement and coordinate the urban forestry programs for Metro Manila, DENR created the Urban Forestry Division (UFD) in 1988, now Urban Forestry and Law Enforcement Division (UFLED), under the Forest Management Services (FMS) of DENR – NCR. The Urban Forestry Section under the UFLED has 2 units: the Planting Stock Unit, which is responsible in planting stock production and distribution, and the Cooperative Planting Unit which is tasked to monitor collaborative UF programs like LKP, CGP and Adopt – A – Street/Park Programs. The Urban Forestry Section is also currently implementing the OPLAN SAGIP PUNO program.

The urban forestry/greening programs of DENR-NCR was conceived and adopted to make Metro Manila into a green metropolis. Among its activities include production of planting stocks; establishment and maintenance of mini–forests; greening of main thoroughfares, side streets and islands; establishment of
joint nurseries with LGUs, NGOs, POs, schools; providing technical assistance and training on proper site preparation, choice of species and proper planting and maintenance; harnessing the cooperation and involvement of the public via information campaign; periodic assessment of greening activities; processing and issuance of balling permits, and implementation of Oplan Sagip Puno program (DENR – NCR Annual Accomplishment Report CY – 2002; Alba 1993).

At the city or municipal government level, specific urban forestry/greening offices were created under the Mayor’s office. Some of these offices are ad – hoc in nature while the others are permanently institutionalized in the city government structure. The greening offices of all the 6 cities have a mandate on green space development and management although in 3 cities (Makati, Pasig, Mandaluyong), they also included cleaning, waste management and pollution monitoring and control as their other mandates. In addition to the greening office, each city also has either a committee (e.g. Cleanliness and Beautification Committee) or Tasks Force (e.g. Clean and Green Task Force) created to enhance active participation of other sectors in the greening and cleaning activities.

The capabilities of these greening offices in terms of manpower, available facilities and financial resources were also assessed by Palijon (2000). He found that: a) majority of these offices felt the need for additional technical staff to fully implement their greening programs such as horticulturist, forester/arborist, and landscape architect; b) the greening offices have inadequate facilities, equipment and tools needed for their programs; and c) all cities, except Makati, have insufficient and unsustainable budget for their greening programs.

In the case of the other mega-cities, the DENR regional office does not have specific urban forestry unit unlike in the NCR. Their urban forestry program activities are being handled by the Reforestation Section under the Forest Resources Development Division of the Forest Management Services, except in Cagayan de Oro (Region 10) where a focal Program Unit for Urban Forestry was recently created by the RED attaching such unit directly to the RTD-FMS. At the city government level, the City ENRO, Clean & Green Office, Task Force Clean & Green and Cleaning & Beautification Committee are usually the offices or bodies attached or created under the Mayor’s Office responsible for management of urban forestry programs just like those of the NCR.

3.6.3.4 Physical Accomplishments of Urban Forestry Program

a) Attainment of the 1:4 tree to person ratio target

The total number of seedlings planted in the urban greening program by city/municipality in Metro Manila from 1988 to 2002. The 17 cities and municipalities comprising Metro Manila (NCR) have an aggregate total of 2,212,488 seedlings planted. The highest number of seedlings planted was in Quezon City (0.72 million seedlings or 34% of total), followed by Manila City (0.31 million seedlings or 14% of total). On the other hand, the total population of Metro Manila in 2000 was 9.93 M people.

Based on the statistics, the estimated tree to person ratio is 1:6 or 1:9 assuming 80% or 50% survival of the seedlings planted, respectively. These ratios are short of the 1:4 target ratio set by MPFD. However, the estimated number of trees is most likely an underestimation because the trees already existing prior to 1988 were not accounted or tallied. For the other mega-cities, the attainment of 1:4 ratio can not be ascertained due to absence of data on the number of seedlings planted on different years and the absence of inventory data on the number of trees already existing in these areas.

b) Accomplishment for mini forests and parks

As mentioned earlier, the minimum number of mini-forests or parks targeted by the MPFD for Metro Manila was 60 for the 8.2 million residents and this was based on the assumption that there should be 1 mini-forest or park per 100,000 – 150,000 residents. Since the present population of Metro Manila (NCR) is about 10M, there should be at least 67 mini-forests or parks already established and maintained.
As of 1994, there were already 472 parks established in different parts of Metro Manila (Table 2.14), which is more than enough (i.e. 7 times more) compared to the target ideal number. Almost 50% of the total number of parks in Metro Manila were established in Quezon City. Between 1996 to 2001, eight more mini-forests were established in Metro Manila covering about 18.20 hectares. Hence, for the entire Metro Manila, a total of 480 mini-forests or parks have already been established as of 2001.

c. Accomplishment for grounds or compound planting or landscaping

As envisaged in the MPFD, at least 570 compounds or grounds should have been planted or landscaped by year 2000 in all six priority cities. Since there is no breakdown per city, the target maybe equally allocated at 95 compounds or grounds per city.

There is no available information on the number of compounds or grounds planted or landscaped in the different mega-cities. Nevertheless, for Metro Manila, data is available on the number of seedlings planted. For the past 14 years, about 1.1 million seedlings have been planted on different types of compounds mostly in the government offices and schools in Metro Manila.

d) Accomplishment for greenbelt development or roadside planting

For Metro Manila, the MPFD targeted 100 km of roadsides planted or greenbelt developed from 1990 – 2000. Since there is also no data available on actual length of roads planted or greenbelt developed, we can use the available data on number of seedlings planted along thoroughfares and streets for extrapolation.

There were 673,813 seedlings planted along major thoroughfares and barangay roads of Metro Manila for the past 14 years. Due to limited space along road shoulders, it is assumed that there will be a single line planting on each side of the road. At 2m spacing, there will be 1,000 seedlings required per km
Table 2.13  Number and types of parks by municipality/city in Metro Manila (as of 1994)  (Source: Uriarte and Festin, 1994)

<table>
<thead>
<tr>
<th>Municipality/City</th>
<th>No. of Parks</th>
<th>Type of Parks</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>A. North CENRO</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Kalookan City</td>
<td>6</td>
<td>Public park/plaza, mini-park</td>
</tr>
<tr>
<td>San Juan</td>
<td>2</td>
<td>Mini-park, shrine</td>
</tr>
<tr>
<td>Mandaluyong</td>
<td>22</td>
<td>Private &amp; public plaza</td>
</tr>
<tr>
<td>Marikina</td>
<td>2</td>
<td>Municipal/mini-park</td>
</tr>
<tr>
<td>Pasig</td>
<td>20</td>
<td>Playgrounds, public parks, municipal park/plazas</td>
</tr>
<tr>
<td>Quezon City **</td>
<td>235</td>
<td>Public parks, playgrounds, parks inside subdivision, park/plaza</td>
</tr>
<tr>
<td><strong>B. West CENRO</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Manila ***</td>
<td>36</td>
<td>Public parks/plazas, playgrounds</td>
</tr>
<tr>
<td>Valenzuela</td>
<td>10</td>
<td>Barangay parks</td>
</tr>
<tr>
<td>Malabon</td>
<td>4</td>
<td>Public plazas</td>
</tr>
<tr>
<td>Navotas</td>
<td>1</td>
<td>Mini-municipal park</td>
</tr>
<tr>
<td><strong>C. South CENRO</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Las Piñas</td>
<td>70</td>
<td>Public plazas, parks inside subdivision</td>
</tr>
<tr>
<td>Makati</td>
<td>27</td>
<td>Public plazas, parks inside subdivision</td>
</tr>
<tr>
<td>Taguig</td>
<td>11</td>
<td>Parks inside subdivision</td>
</tr>
<tr>
<td>Parañaque</td>
<td>19</td>
<td>Playgrounds, public parks</td>
</tr>
<tr>
<td>Pasay City</td>
<td>4</td>
<td>Municipal park, playgrounds</td>
</tr>
<tr>
<td>Muntinlupa ****</td>
<td>3</td>
<td>Public parks, private parks</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>472</td>
<td></td>
</tr>
</tbody>
</table>

* List provided by municipality/city
** Includes Q.C. Memorial Park
*** Includes Mehan Garden, Rizal Park & Paco Park
**** Includes parks inside Alabang Stockfarm and Bilibid Prison

Assuming these 673,813 seedlings planted included 50% replanting, it is estimated that about 337 km of roads and thoroughfares should have been planted in Metro Manila. This is 3.4 times more than the target of MPFD.

For Iloilo City, the DENR-FMS Region 6 reported 34 adoptors (government agencies, universities, private companies, NGOs, etc.) involved in Adopt-A-Street/Park Program since 1994. Of the 34 adoptors, 31 adopted streets spanning 17 km while 3 adopted perimeters of parks covering about 1 km. Since the MPFD’s roadside planting target from 1996 to 2000 is 35 km, only about 50% of the target was accomplished.

In the case of Cagayan de Oro City, there were 10.5 km roadside planting done in 1995 to 1999 in barangays Balubal and Indahag and along Lumbia Airport Road (DENR-FMS Region 10). On the other hand, the City ENRO conducted 8 km highway tree planting/urban greening in barangays Cugma, Tablon, Bugo and other urban barangays (City ENRO – Cagayan de Oro City). Thus, the DENR and City ENRO’s roadside planting efforts fall short (i.e. only 46% accomplishment) of the MPFD’s 1996-2000 target of 40 km. However, for the year 2001-2005, the MPFD’s target of 20 km greenbelt development was already accomplished through the tree and bamboo planting project undertaken in 2002 along 20 km riverbanks in barangays Balulang, Lumbia, Bayanga, Mambuaya and Dansolihon through a contract awarded by the ENRO to MARBEMCO, a people’s organization (City ENRO - Cagayan de Oro, 2002).
2.6.3.5 Issues / Problems/ Constraints on Urban Forestry or Green Space Development and Management

Numerous issues/problems/constraints were raised during the 1993 Policy Seminar – Workshop on Participatory Urban Forestry Development for Environmental Enhancement in Metro Manila (FDC,1993), and those presented by Palijon (1998, 2000) based on his analysis of green space management strategies in Metro Manila. On the national level, several issues/constraints/problems were listed based on the 1993 Regional Annual Reports on Urban forestry by the DENR regional offices. Among the issues identified are as follows:

- Institutional
  - Absence of urban forestry section in DENR regional offices except NCR
  - Poor or unsustained inter-agency coordination
  - Lack of organizational capability
  - Absence of Master Plan on urban forestry development

- Social and political
  - Vandalism/indifference or apathy by the general public
  - Uncontrolled squatting / encroachment
  - Improper use of street corridors
  - Damage or removal of trees due to road expansion, installation of electric and telephone lines, construction of new buildings, etc.
  - Land use conflicts/lack of proper zoning
  - Lack of tree protection ordinances or laxity in implementation of existing laws in some cities of Metro Manila.
  - Ineffective urban population and migration control programs

- Biophysical and technical
  - Lack of water during summer
  - Frequent occurrence of typhoons
  - Unsuitable soil physical and chemical properties
  - Poor species-site compatibility
  - Incompatible design of drainage systems and other underground utilities which restrict growth of planted trees.
  - Lack of maintenance & protection and monitoring of growth/survival performance of trees planted
  - No M&E system for urban forestry program.
2.7 Community-Based Forest Management

2.7.1 Introduction

The recent CBFM is a product of a series of several attempts to put forestry closer to people. This started through the implementation of various people-oriented forestry programs designed primarily to ease off population pressure from forestlands, make their upland stay more productive and ensure that forest environment is aptly protected. From a highly punitive approaches in the early 60s that aimed at discouraging migration to and occupation of the uplands, the government shifted to more socially acceptable approaches to the current CBFM strategy today where upland communities are progressing into autonomous and responsible forest managers.

The first of the government's serious programs to address the burgeoning upland population started in 1963 with the launching of the Kaingin Management Act, (R.A. 3701) which provided for the prosecution and ejection of kaingineros from their upland farms. This law did not prosper because of numerous impracticalities in its implementation. One of classic situations that happened was that while the father of a family is in jail, his wife, sons and daughters continue to till the land and expand their farms within the forest zones.

Exodus to the uplands continued steadily, primarily propelled by opening of numerous timber concessions and the worsening lack of opportunities in the lowlands. A Kaingin Management Program was launched in 1972 through P.D. 389 which provided for the management of forest occupants in place. The general approach espoused by this program was still punitive. However, this did not deter the phenomenal increase in the upland population. In 2000, the total upland population is estimated at around 24 million (MPFD, 1990). Since then, many other people-oriented forestry programs were tried particularly, the Forest Occupancy Management (FOM, 1975), the Family Approach to Reforestation (FAR, 1979), the Communal Tree Farm (CTF, 1979), and the Integrated Social Forestry Program (ISFP, 1982). The National Forestation Program (NFP) which integrated all reforestation efforts was launched in 1986 and Ancestral Domain Management Program (ADMP, 1993).

The years after the ISFP and NFP launchings saw a gradual yet major transformation in the DENR thrusts and directions. From a basically regulatory agency which views punitive measures as a major solution to deforestation, the DENR deliberately progressed and became more receptive to people’s plight. It took the role of a developmental agency, initiating development projects, and finally viewing the lowly kaingineros and other traditional enemies of the forest as potential partners in forest protection and conservation. When the 1990 MPFD was formulated, it consolidated all social forestry programs into one umbrella program, the people-oriented forestry programs (POFP).

In 1995, and through Executive Order No. 263 series of 1995, all people-oriented forestry programs were integrated into the Community-Based Forest Management Program. The implementing guidelines of this EO are embodied in DAO 96-29 which serves as the mother guidelines for all CBFM projects. CBFM became one of the flagship programs of the DENR. The Program promotes active and productive partnership between the government and the forest communities in developing, rehabilitating and managing vast tracks of forest areas. It is anchored on the thesis that if government seriously addressed the poverty problems in the upland communities, then these same communities as represented by the People’s Organizations will themselves protect and manage the forests. Thus, the CBFM slogan - “People first, sustainable forestry will follow.”

Under CBFM, the role of the communities in forest management is given significant importance. They are being organized and given long term tenurial instruments over forest areas with the privilege to derive direct benefits through harvesting of forest products, agroforestry and other livelihood programs. However, these privileges and benefits go hand in hand with the corresponding obligation to manage and protect the forest area in the long term. Moreover, benefits derived from production shares and livelihood
opportunities are supposed to plow back and be equitably distributed to the POs, their members and families.

At present, CBFM is the biggest program of the DENR in terms of area and number of beneficiaries. In efforts to make the forestry sector responsive to the overall alleviation of poverty in the uplands, the CBFM program was given more focus and attention. As the overall strategy to rehabilitate and develop the uplands, there is a need to continually examine the program vis a vis other DENR programs and current realities obtaining in the forestry sector. It is a very important component of any plan for the sector. Thus, there is a need to continually assess the program and focus is needed in improving the various strategies involved in this program.

2.7.2 1990 Master Plan Provisions

The MPFD of 1990 appropriately discussed the nature of our upland settings where vast areas of forestlands were converted from highly productive forest uses into unsustainable upland farms, settlements, and even commercial districts. Population was slowly creeping to the forest zones. In 1948, upland population records show a 5.9 million upland population. The same master plan projected that by year 2000, the upland population would be 24.7 million. That would be around 320 percent increase over the 52 year period or an average annual growth rate of 2.80 percent, a rate which is very much higher than the national annual population growth rate of 2.04 percent. With most of these people living in abject poverty, the most logical source of livelihood would be the uplands which are just waiting to be exploited for subsistence agriculture and agroforestry. Gathering of economically important forest products would also be a logical choice. However, the proliferation of unplanned and unsystematic farming and products extraction methods exacerbated the already fragile upland ecosystem which resulted to massive forest destruction.

Under the POFP, the MPFD pursued a holistic upland development approach by providing necessary conditions for effective and meaningful people's participation. The overarching goal pursued is to improve the quality of life of upland dwellers and communities under an ecologically sound environment (MPFD, 1990). Among the objectives of POFP are as follows:

- To promote the protection of existing forests;
- To put every square meter of the uplands under management under appropriate tenurial instrument;
- To rehabilitate and improve the productivity of upland farms;
- To stabilize upland areas through the adoption of soil conservation techniques;
- To increase income and improve the standard of living of upland dwellers; and
- To promote local government units (LGUs) and NGOs as leaders and partners in forestry development.

Several enabling conditions were pursued which became the integral strategies implemented among which are: provision of security of tenure over forestlands, reorientation and retraining of forest officers highlighting their technician's role in upland development, increasing the roles of NGOs in upland development, recognition of LGUs as integral players in upland development and provision of support systems such as access to credit and market facilities, among others.

Among the programs identified are as follows:

- Integrated Social Forestry within extensive land uses and farmed public lands
- CBFM within residual forests and extensive land uses
- Contract reforestation with FLMA within grasslands and degraded brushlands
- Ancestral land management within valid ancestral land claims
- LGUs and NGOs in all upland development areas
- Household firewood production in A & D lands.

The following are the scenarios envisaged under the program (Table 2.14):

Table 2.14. Scenarios envisaged under POFP of 1990 MPFD.

<table>
<thead>
<tr>
<th>Program</th>
<th>Cumulative Targets</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. ISFP - CSC processed &amp; issued (000 ha)</td>
<td></td>
</tr>
<tr>
<td>- Regular</td>
<td>11.7</td>
</tr>
<tr>
<td>- ARF</td>
<td>15</td>
</tr>
<tr>
<td>- Family Beneficiaries (000)</td>
<td>26.7</td>
</tr>
<tr>
<td>2. Plantations placed under FLMA</td>
<td></td>
</tr>
<tr>
<td>- Area</td>
<td>428</td>
</tr>
<tr>
<td>- Families</td>
<td>61.1</td>
</tr>
<tr>
<td>3. CBFMA Issued</td>
<td></td>
</tr>
<tr>
<td>- largeholders</td>
<td>5</td>
</tr>
<tr>
<td>- mediumholders</td>
<td>15</td>
</tr>
<tr>
<td>- smallholders</td>
<td>130</td>
</tr>
<tr>
<td>T O T A L</td>
<td>150</td>
</tr>
<tr>
<td>4. Training of: ('000)</td>
<td></td>
</tr>
<tr>
<td>- Officers</td>
<td>4.0</td>
</tr>
<tr>
<td>- NGOs, LGUs</td>
<td>0.6</td>
</tr>
<tr>
<td>- Farmers</td>
<td>60.0</td>
</tr>
<tr>
<td>T O T A L</td>
<td>64.6</td>
</tr>
<tr>
<td>5. NGOs and farmers served</td>
<td></td>
</tr>
<tr>
<td>- Coverage (000 ha)</td>
<td>456</td>
</tr>
<tr>
<td>- Farmers served (000)</td>
<td>45</td>
</tr>
<tr>
<td>- NGOs involved</td>
<td>150</td>
</tr>
<tr>
<td>- Local NGO units</td>
<td>350</td>
</tr>
<tr>
<td>6. NGOs in Parks and Reserves Management</td>
<td></td>
</tr>
<tr>
<td>- Parks contract</td>
<td>2</td>
</tr>
<tr>
<td>- Sanctuaries contract</td>
<td>0</td>
</tr>
<tr>
<td>- Coverage (000 ha)</td>
<td>5</td>
</tr>
<tr>
<td>- NGOs involved</td>
<td>1</td>
</tr>
</tbody>
</table>
With the above scenario, the MPFD estimated the annual costs of POFP as follows (Table 2.15):

Table 2.15. Annual cost estimates of POFP.

<table>
<thead>
<tr>
<th>Programs</th>
<th>Average Annual Costs (Million Pesos)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Integrated Social Forestry</td>
<td>1253.94</td>
</tr>
<tr>
<td>Community Based Forest Management</td>
<td>14.03</td>
</tr>
<tr>
<td>Forest Land Management Agreement</td>
<td>4.10</td>
</tr>
<tr>
<td>Ancestral Land Management</td>
<td>6.00</td>
</tr>
<tr>
<td>Tree Farming in A &amp; D Lands</td>
<td>37.20</td>
</tr>
<tr>
<td>NGOs/LGUs in Upland Development</td>
<td>17.85</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td><strong>1,333.12</strong></td>
</tr>
</tbody>
</table>

Under the 1990 MPFD, CBFM is but a component program of the overall People Oriented Forestry Program (POFP). Nevertheless, with the developments that followed and by virtue of DAO 96-30, CBFM, by deliberate actions, became the banner program of the DENR in developing the uplands.

2.7.3 The People-Oriented Forestry Program/CBFM Assessment

POFP consolidated several existing programs of the Department at that time, namely: Integrated Social Forestry Program (ISFP), the Community Forestry Program and the Ancestral Land/Domain Management Program, among others. Other programs also fell under its umbrella, namely: the National Forestation Program where the Forestry Sectoral Loans (Loans I & II) were implemented. In 1996, DAO 96-30 integrated all CBFM and POF Programs of the DENR into DENR regular structure. Table 16 shows the DENR programs covered under the umbrella of POFP.
Table 2.16. POFP projects implemented by the DENR.

<table>
<thead>
<tr>
<th>Program/Project</th>
<th>Implementing Scheme/Tenure</th>
</tr>
</thead>
<tbody>
<tr>
<td>ENR-SECAL</td>
<td>Watershed management planning with heavy infrastructure support, CO by DENR staff, tenure, CSC</td>
</tr>
<tr>
<td>FSP/ADB (FSL-I)</td>
<td>Loan Support for comprehensive site development, CSD by contract reforestation, with ISF/CFP support component, CO by contract with NGO, tenure, FLMA where some were converted to CBFMA</td>
</tr>
<tr>
<td>FSP/ADB/OECF (FSL-II)</td>
<td>Loan Support for comprehensive site development, CSD by contract to POs, CO by contract with NGO, with assisting professionals, PMO by DENR on-site, with infrastructure support, tenure, CBFMA</td>
</tr>
<tr>
<td>CEP</td>
<td>Site development through volunteer labor, seedlings provided by program, tenure, MSA</td>
</tr>
<tr>
<td>NRMP</td>
<td>Site development from funds generated from resources coming from CBFM area, CO be DENR staff and assisting professionals, CSC inside CBFM area, CADC</td>
</tr>
<tr>
<td>LIUCP</td>
<td>Projects based on watersheds. Heavy emphasis on infrastructure development in cooperation with LGUs, tenure, CFSAn, converted later to CADC, CSC</td>
</tr>
<tr>
<td>CFP</td>
<td>Loan support for CSD, CO by contract with NGO, tenure, CBFMA</td>
</tr>
<tr>
<td>ISF</td>
<td>Mostly through individual families, technical support services provided by DENR, CO by DENR staff, tenure, CSC, later CBFMA</td>
</tr>
<tr>
<td>ADMP</td>
<td>Site development from funds generated from resources coming from CBFM area, CO be DENR staff, tenure, CADC &amp; CALC</td>
</tr>
<tr>
<td>Integrated Rainforest Management Project</td>
<td>CO, mobilization of local resources, institutional strengthening of LGUs, NGOs, financial institutions and DENR, tenure, CBFMA, CSC</td>
</tr>
<tr>
<td>Cordillera Highland Agriculture Resource Mgt. Proj. (NR Component)</td>
<td>Landuse tenure security, community mobilization and participatory planning, tenure, CADC &amp; CALC</td>
</tr>
<tr>
<td>Community Based Management of Logged-Over Areas (CMLOA)</td>
<td>Program support to CFP in two sites, training in planning, organizing, enterprise development, CBFMA</td>
</tr>
</tbody>
</table>

Sources: Tesoro (1999), and DENR.
2.7.4. Issues and Problems

CBFM implementation is beset by various policy concerns and problems. At the outset, CBFM implementation is governed by numerous policies and guidelines through a series of Administrative Orders, Circulars and Memorandum Orders. Some were intended for specific projects funded by a particular bank and implemented through a specific program. As specifically recommended in the Project Completion Report (PCR, 1995) of the Forestry Sector Loan I which pushed for CBFM operationalization, the CBFM program requires simpler guidelines. However, actual program implementation required very specific and numerous guidelines. Thus, with the 15 years implementation of CBFM, beginning from CFP to date, already around 19 DAOs, 11 MCs, and at least a dozen MOs concerning CBFM were issued. These are apart from many other laws and regulations impinging on CBFM as well as regional orders and instructions which add to the entanglement of policies and guidelines.

Apparently, with this maze of instruments used in running the CBFM, even the DENR field CBFM staff are confused as to what policies to discard and enforce or which provisions of current guidelines are still enforced or have already been amended. Moreover, there are issues and problems on conflicts and practicality between and among policies. Some guidelines are even in conflict with existing laws.

For facility of discussion, the above issues and problems are grouped according to policy, technical, institutional, socio-economic/financial, and others.

- Policy Issues and Conflicts

Within 15 years CBFM, around 19 DAOs, 11 MCs, and at least a dozen MOs were issued apart from many other laws and regulations impinging on CBFM. One of the classic examples of inter-policy conflict affecting CBFM is the case of Community-Based Forest Management Special Account (CBFMSA). Pursuant to EO 263, and under Article VII, Section 2 of DAO 96-29, the DENR is mandated to establish the CBFMSA to support the implementation of the Program including the provision of financial support and other incentives to deserving POs, communities, non-government organizations and government personnel. It also provides that the DENR may source local and international grants and donations for the establishment of such account. There is also a standing proposal by DENR to source funds from the government share coming from CBFM sites as pursuant to DAO 98-42. However, according to the General Appropriations Act (GAA of various years) which is being enacted yearly, establishment of such account is prohibited. Among the summarized policy issues are as follows:

- CBFMSA under EO 263 un-implementable because of GAA provisions of one fund rule,
- DAO 98-42 about production sharing in CBFM projects unimplementable due to the same GAA
- DAO 98-10 allows cutting of planted mangrove species in CBFM areas vs. Sec. 4. of RA 7161 which prohibits the same
- Unclear policy on timber harvesting in watershed areas
- NCIP requirements of Free and Prior Informed Consent delaying issuance of CBFMA in some areas, lack of proper interface mechanisms of CBFM program with the IPRA Law (RA No. 8371)
- Lack of clear-cut policies in issuance of RUPs, especially in NTFP
- Confusions in production sharing policy

- Technical/Operational

- Requirements AWP formulation are too technical but good only for 1 year
- EIA requirements on POs developmental and utilization activities are too technical and complicated to understand and comply
- Weak forest management capabilities of POs
• Institutional
  o RUPs implementation hampered by too much bureaucracy, countless delays in almost everything
  o Lack of appreciation of certain sectors about CBFM, inadequate knowledge about CBFM
  o PO’s are denied incentives granted to them –DAO 96-29, and DAO 98-43
  o Weak institutional partnership with LGUs, weak collaboration among concerned agencies resulting to weak support to POs, weak support to forest protection by the POs
  o Internal problems within the POs related to financial and leadership concerns.

• Financial and Economic
  o High transaction costs of forest utilization in CBFM areas
  o Costly ECC
  o Very cheap price for CBFM products
  o Weak financial management system (FMS)/ lack of financial resources

• Other issues problems

  Among the other issues and problems found in various assessments and evaluations conducted by various sectors and agencies, and which are cross-cutting and/or overlapping within some categories are as follows:

  o Weak collaboration among concerned agencies resulting to weak support to POs, weak support to forest protection by the POs
  o Internal problems within the POs related to financial and leadership concerns.
  o Weak forest management capabilities of POs resulting from lack of highly trained DENR field staff to guide them.
  o Countless delays in almost everything; e.g., preparation of IEE, issuance of ECC, FPIP, and CBFMA, formulation and affirmation of CRMF, AWP, processing of transport documents like CO, CLO etc. Too many requirement for the PO to understand, much less to comply. Cases of fitting the PO to the project not fitting the project to the PO
  o Lack of clear-cut policies in issuance of RUPs, especially in NTFP.
  o Confusions in production sharing policy.
  o Still, lack of understanding about CBFM by other sectors of society.
  o Abuse of CBFM papers – being used in illicit activities in connivance with DENR.
  o Unclear understanding of government procedures by the POs.
  o Inequity in providing financial support to CBFM projects, some sites are well-funded especially those with foreign support while the regular CBFM sites have no funds for even a few hectares of plantations.

2.7.5 POFP Accomplishments under 1990 MPFD

The MPFD projected POFP targets based on a 5-year period. For facility of discussions, this paper made an analysis of project accomplishments based on 5 year periods too. Due to difficulty in ascertaining budget support allocated into the program because of problems in disaggregating budget allocations for specific programs, and while some POF programs has integral components which are not part of POFP targets, results of this assessment are rather indicative. Furthermore, due to the devolution of most ISFP sites into the LGUs, and their eventual entry into CBFM, it is difficult to provide exact budget figures that went into POFP. Nevertheless, what were presented here represent trends that would indicate adherence to the Plan as well as the level of political commitment that went into its implementation.

Based on the targets set (Table 9), the DENR is supposed to have issued 526,000 CSCs, 450 CBFMA of various sizes, and around 70,200 FLMA issued. This translate to a cumulative area of 3,244 million ha. These three major POFP components has a proposed cumulative budget of around 12,197.4
million pesos. Together with other components, the total proposed budget for POFP until 2000 is 12,312 million pesos.

It is worth to note that at the time the MPFD was implemented, there were already existing projects which would logically fall under the umbrella of POFP, among which are the Integrated Social Forestry Program (ISFP), the Community-Based Management Program, the Ancestral Land/Domain Management Program and the Forestry Sector Loan I project which at the outset has POFP components, namely: Community Forestry Program and Community Organizing component. In totality, there were 14 projects implemented under POFP. In mid 1990s, all POF programs were integrated into one banner program, the CBFM. Thus, the success or failure of POFP as a program can be largely gauged by how we look at the present CBFM.

As of the year 2000, the total area covered by CBFM is around 5.2 million ha. Thus, POFP overshot its target by 62.4% in terms of hectarage. The total proposed budget was 12,197.4 million pesos. The total amount budgeted by the DENR for the program was 12,312.1 (Table 2.17). In terms of budget allocation, the POFP proposed budget was overshot by 1 percent.

As of December 2002, a total of 4,956 sites are covered by CBFM comprising a total of 5.7 million ha (Table 2.18). The tenured area or areas already covered by approved tenurial instruments like CFMA, CBFMA, CADT, etc., is around 4.4 million ha. The program benefits around 2,182 peoples organizations comprising a total of 496,175 households with about 2.5 million community members. At present, CBFM is one of the biggest government programs in terms of number of beneficiaries and area coverage.
Table 2.16. Appropriations of POFP (Million P), GAA

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<tr>
<td>ISF Projects</td>
<td>36.5</td>
<td>37.3</td>
<td>40.5</td>
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<tr>
<td>FSL (ADB-LP)</td>
<td>697.3</td>
<td>697.2</td>
<td>529.1</td>
<td>127.4</td>
<td>323.1</td>
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<td>FSL (OECF-LP)</td>
<td>1533.9</td>
<td>862.3</td>
<td>277.7</td>
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<tr>
<td>Strengthening of ISF Projects</td>
<td>5.3</td>
<td>5.2</td>
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<tr>
<td>LIUCP</td>
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<td>167.3</td>
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<tr>
<td>POFP</td>
<td>57.4</td>
<td>108.0</td>
<td>138.9</td>
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<tr>
<td>Loan II (ADB) /1</td>
<td></td>
<td></td>
<td></td>
<td>181.2</td>
<td>537.6</td>
<td>595.8</td>
<td>728.8</td>
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<td></td>
<td>33.7</td>
<td>124.5</td>
<td>423.2</td>
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<td>CBFM</td>
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<tr>
<td>CEB</td>
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<tr>
<td>SMICZMP</td>
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<tr>
<td>TOTAL</td>
<td>2273.0</td>
<td>1613.3</td>
<td>736.9</td>
<td>753.5</td>
<td>951.8</td>
<td>828.3</td>
<td>1,290.9</td>
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<td>ISF Projects</td>
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<td>Strengthening of ISF Projects</td>
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<td>POFP</td>
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<tr>
<td>CBFM</td>
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<td>272.2</td>
<td>508.9</td>
<td>672.6</td>
<td>247.7</td>
<td>483.4</td>
<td>581.4</td>
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<tr>
<td>CEP</td>
<td>67.8</td>
<td>97.4</td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>SMICZMP</td>
<td>118.4</td>
<td>53.7</td>
<td></td>
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<td></td>
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</tr>
<tr>
<td>TOTAL</td>
<td>1,868.5</td>
<td>516.9</td>
<td>709.0</td>
<td>770.0</td>
<td>247.7</td>
<td>558.7</td>
<td>8,447.7</td>
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</table>

Total for Yr 2000 = 8,447.7

1/ Both loan proceeds (LP) and GOP counterpart (Source: NFDO).
The basic goal of POFP of improving the life of upland dwellers has been largely attained especially to majority of program beneficiaries. Selected studies conducted in several CBFM sites showed significant increase in HH income. Monitoring and evaluation reports of CBFM projects being implemented by FSP showed a general significant increase in household income during project implementation phase. The increase in income tapered off during the last stages of comprehensive site development (CSD). The POs income is again expected to increase during the harvest stage, especially, from the agroforestry farms.

With respect to the objectives, both quantitative and qualitative assessment was done to compare performance against the set targets. Among the objectives of POFP are as follows:

- To promote the protection of existing forest resources – Considering that 5.7 million ha are now under CBFM, it is considered that such vast tract of forestlands are now under some kind of formal management and protection systems. However, such systems do not speak of the quality of forest management and effectiveness of POs in forest protection.

- To put every square meter of the uplands under management under appropriate tenurial arrangements. At present there are 4.4 million ha of CBFM sites under formal tenurial instruments. Under process are some 1.3 million ha of remaining CBFM areas not yet issued with legal instruments due to some procedural delays and IEC problems. Together with other management instruments, it is noted that CBFM is one of the potent strategies to close the open access forest areas.

- To improve the productivity of the uplands – Under most CBFM sites, formerly unproductive grasslands and brushlands are being transformed into forest plantations and agroforestry farms.
Under the FSP alone, some 38,992 ha of plantations were developed under ADB funding and another 68,444 ha were developed under JBIC funding (NFDO Planning Office, 2003). At present, estimates of plantations developed under CBFM is around 124,000 ha (CBMFO-FMB, 2003). Areas under Loan I which eventually have been covered by FLMA totals to more than 21,126 ha (MIS, FMB, 2003). These are apart from many FLMA areas which were eventually converted into CBFMA. Such presence of planted areas maintained and protected by the POs is one indicator that upland productivity is improving under CBFM.

- To stabilize upland areas through the adoption of soil conservation techniques - CBFM as a forest management strategy integrates soil and water conservation measures in its overall plans. It endeavors to develop plantations both as economic crops and soil protection measures. However, the mere presence of plantations is not an adequate, much more, an appropriate indicator of reduced soil erosion.

- To increase income and improve standard of living in CBFM areas - Initial assessments of CBFM sites showed significant increase in income for majority of project beneficiaries. Monitoring and evaluation reports of CBFM projects being implemented by FSP showed a general significant increase in household income during project implementation phase. This is primarily due to high labor requirements during the initial stages of comprehensive site development (CSD). FSP experience showed that some of the POs even hire labor from outside the community to cope with their plantation targets. The increase in income tapers off during the last stages of CSD. The POs income is again expected to increase during the harvest stage, especially, from the agroforestry farms and in the implementation of their livelihood projects.

- To promote local government units (LGU's) and NGOs as leaders and partners of forestry development. There are few indications that this has been met. In every CBFM site, LGU involvement is one of the integral and necessary components for the project in order to succeed. CBFM proponents who ignored this basic component suffered many organizational setbacks. In the more than 4,900 CBFM sites nationwide, LGUs had been involved in one way or the other. However, degree of involvement varies. At the barangay level, LGU involvement has been significant as most of the barangay officials are directly involved in the consultations, planning and implementation of CBFM projects. Many of them act as PO leaders and advisers. However, at the level of municipality, district and up to provincial level, LGU participation becomes insignificant in most sites. Many CBFM POs are encountering problems in their operations because of the lack of support from local politicians. This is one aspect of CBFM implementation that needs enhancing.

2.7.7 Synthesis of Results

Like any other government programs, CBFM is still beset by many issues and problems relating to policy, weaknesses of implementing institutions, technical and operational problems, and even internal problems besetting the people’s organizations who are the direct implementers of the project.

There are inter and intra policy conflicts that prevents the fluid implementation of the programs. Foremost in the policy constraints is the unimplementability of basic support programs like operationalization of CBFMSA and the production sharing system, and the apparent impracticability of some guidelines. Low awareness on guidelines regarding forest products harvesting and utilization in CBFM areas also causes costly delays in POs operations.

Institutional constraints like lack of trained DENR personnel to sustain assistance to the POs and low level of LGU collaboration and participation are also seen as factors preventing full-blast implementation of some CBFM projects. Weak institutional capacity of the POs themselves causes internal conflicts that leads to weak resource utilization decisions, wrong investments and mismanagement of funds. The lack of financial resources among the POs prevent them to pursue planned activities and targets.
On the other hand, other sites are successful in many aspects of CBFM implementation. The above observations reflect the long list of weaknesses observed in some sites but this may not be true to all sites. Thus, for any intervention to have added value for the different stakeholders, it is important to assess first the needs of particular sites before proceeding with developmental interventions to optimize the use of scarce resources.
2.8 IEC and Training

2.8.1 Introduction

Forestry information, education, extension and training provide vital support for effective implementation of MPFD programs. They are crucial in providing relevant information, and in developing trained manpower and extension workers to generate public awareness, appreciation, participation and support in forest management.

2.8.1.1 Forestry Education in the Philippines

Forestry education seeks to promote knowledge in forestry, search for new knowledge through research and promote the application of scientific forestry knowledge in the sustainable management, conservation and utilization of forest resources (MPFD, 1990). Forestry education in the Philippines has been generally patterned after the American and European forestry system. Thus, most of the technologies and programs were adapted for temperate climates. However, in spite of this, the forestry academic institutions has managed to train students as professional foresters and technicians who served the needs of forestry in the country.

There used to have only one forestry school in the Philippines – the College of Forestry at the University of the Philippines in Los Banos, Laguna. But through the years, the number of forestry schools has steadily increased to the current forty eight (48) state-supported colleges/universities and private schools. Seven (7) of these academic institutions offer technician level programs while only eight (8) offer graduate program. All of them have baccalaureate courses. Roughly 275 registered Professional Foresters are added every year bringing the total number of registered Foresters to 7,451 as of April 2001.

To update forestry practitioners of current trends in forestry technologies and practices, the DENR also undertakes refresher courses and in-service trainings. These include trainings on watershed-based integrated natural resources planning and management, forest land use planning, seed technology and planting stock production, forest research and development, reforestation and soil conservation techniques, plantation management, forest resources inventory techniques and many others. Reorientation seminars/workshops and skills enhancement trainings are likewise provided by the DENR to upgrade the skills of Foresters and other personnel in implementing new policies and strategies in forest management. For instance, training courses on protected area management had been undertaken in support of the NIPAS Act. Community organizing/community development courses for Foresters and enhancement trainings for DENR Project Managers of CBFM projects were also conducted to equip them with the necessary skills in implementing the Community-Based Forest Management Program as provided under Executive Order 263. In addition, the Department provides scholarship grants to its Foresters for them to pursue short and long term degree courses .

2.8.1.2 Forestry Information and Extension

The new direction towards greater stakeholders’ participation in forest resources management as provided under Executive Order 263, the Local Government Code, NIPAS Act, Indigenous Peoples Rights Act (IPRA) and other related issuances is expected to create greater demand for forestry information and extension services. With government resources becoming limited and an increasing demand for forest products and services, DENR will need to raise the awareness levels of various sectors and sustain their interest in forest resources development, protection and management.

The signing of Republic Act 3523 in 1960 signaled the start of the first formal extension and communication program in forestry. This law authorized the UP College of Forestry to undertake a nationwide forestry information and extension program. When the Bureau of Forest Development was organized, a Forestry Extension Division was created, which also planned and coordinated the conduct of forestry information and extension activities in the country through its counterpart units in the field. However, when the Integrated Social Forestry (ISF) Program was launched under LOI 1260 in 1982, the
forestry extension division was abolished and absorbed as only one of the sections in the SF division. Later, under the reorganized Department of Environment and Natural Resources, forestry information and extension was integrated into the relevant units of the Department while a Public Affairs Office was installed.

Forestry information and extension program has focused more on promoting the various programs of the DENR, on forestry production and processing technologies as well as on general topics of forest protection and conservation. Its effectiveness, however, is being hampered by lack of adequate, updated and reliable information on the state of forest resources in the Philippines. Statistical data on land uses, land tenure issuances, forest cover, open access areas and other information are yet to be harmonized and translated into maps. These information are crucial for communities, LGUs, private investors and other stakeholders in deciding where and in what way they can participate in forest development activities.

2.8.2 Brief Review of the Master Plan Provisions

As provided in the MPFD, the main objectives of forestry education and training are:

1. To develop educational institutions of high standards which are supportive of the objectives of the forestry sector and contributing their share through manpower development, research, extension and public service;
2. To develop sufficient numbers of manpower well trained in different levels of forestry work appropriate to the needs of the forestry service; and
3. To keep the human resources in the forestry sector abreast of development in theory and practice in the fields of forestry relevant and appropriate to their work.

On the other hand, forestry extension and communication seeks to:

1. To promote effective partnership between the state and the various publics, particularly the upland communities, in achieving sustainable use of public lands through management systems that are environmentally and economically productive and culturally appropriate; and
2. To ensure conservation, development and protection of forest resources through the support and active participation of a well informed public.

To attain the above objectives, the MPFD has proposed the strengthening of forestry education, manpower training and extension and communication as follows:

- Strengthening forestry education

  The forestry master plan provides for the rationalization of the forestry educational system by establishing one national college of forestry and one school or college in each of the regions except NCR. This requires the abolition of substandard forestry programs, resulting in lesser schools and greater support given for faculty development, facilities improvement and support for research and other programs. In addition, a recruitment program will be followed to encourage highly qualified students to pursue forestry with provisions for scholarships and other financial assistance.

- Strengthening manpower training

  As planned, the manpower training capabilities of the DENR will be developed by establishing regional and provincial training centers. Within a ten year period from 1991 to 2000, the MPFD has targeted the establishment of 13 regional training centers and 70 provincial training centers. The regional training centers will train trainors as well as participants from the DENR, NGOs, and LGUs while the provincial training centers will handle trainings of community participants.
• Strengthening extension and communication

The strategies identified by the MPFD to strengthen DENR's extension and communication include a) the establishment of a body that coordinates information and communication components of various forestry programs b) providing enough training to field staff, particularly in reorienting them to their new role as partners of the people in forestry development c) delivery of support to the various forest manager-operators, such as information on forest policies, laws, rules and regulations; technical advice, marketing assistance and others. At the same time, the plan proposed the establishment of a public information and dissemination program at the field operations office to undertake public information and create awareness and understanding of the forestry programs and ultimately gain public support for DENR.

The yearly financial requirements of the education, extension and training program under the MPFD is 251.7 million pesos from 1991-1995 and 408.8 million pesos from 1996 to 2000. Thus, over a ten year period the total budgetary requirements is 3,300 million pesos. Roughly 26.3% of this amount is supposed to be funded by the government, 4.6% by the private sector and 69.1% by foreign sources.

2.8.3 MPFD Assessment

The assessment conducted focused on the comparison of the accomplishments so far achieved from 1990 to 2002 vis a vis the targets set under the MPFD. The policy and institutional issues affecting MPFD implementation in so far as the education, extension and training programs are concerned were also identified.

2.8.3.1 Accomplishments vs Targets

Most of the targets in the MPFD relating to IEC and training are qualitative. Except for the rationalization of forestry schools and the establishment of training centers which are quantitative, the other targets particularly on forestry extension are not quantified. A summary of the assessment of the MPFD implementation, with respect to its education, training and forestry extension and communication program, is provided in Table 2.19.

Overall, the assessment indicate that as far as rationalization of the forestry educational system is concerned, this was not realized. While the MPFD targeted the reduction in forestry schools, what happened is that more schools were added bringing the total number to 48 by 1999. In terms of strengthening manpower training, this component was inadequately implemented. Out of the 13 regional training centers targeted, only 11 RTCs have so far been established with most of them needing renovations. On the other hand, not a single provincial training center (PTC) was developed compared to 70 targeted under the MPFD.

With regards to extension and communication, this component was partly achieved. A lot of trainings/workshops were undertaken not only for DENR field staff but for LGUs, NGOs and POs as well. Various media have been employed to raise the awareness level of various sectors on forestry development programs and gain public support for the DENR. It seems that somehow public awareness on the benefits of the forests has been heightened. A clear indicator of this is the increasing clamor from LGUs and POs for management of forestland areas specially those used for watershed purposes. Many private business groups also have expressed interest in developing forest land areas into plantations to ensure sustained flow of raw materials for their processing plants. However, while there is heightened awareness about the state of forest resources in the country and their ecological value, there are some problems/issues/barriers that inhibit participation of major stakeholders in forest development activities. To coordinate the IEC activities of DENR, the Public Affairs Office and its counterpart units in the regions were also organized. In spite of this mandate, however, there is very little integration of IEC activities especially in the field offices.
Table 2.19. Education, Training, Extension and Communication Program Accomplishments vis-a-vis Targets of the MPFD

<table>
<thead>
<tr>
<th>Objectives/Strategies/Activities</th>
<th>Targets</th>
<th>Accomplishments/Status</th>
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</thead>
<tbody>
<tr>
<td><strong>Education and Training Component</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>a) Rationalize forestry schools</td>
<td>Reduction to 14 schools by CY 2000</td>
<td>There are now 52 forestry schools in the Phil.</td>
</tr>
<tr>
<td>- Organize associations of forestry schools</td>
<td>Established</td>
<td>Regional research consortia organized</td>
</tr>
<tr>
<td>- Promote faculty development</td>
<td>in place</td>
<td>Faculty development opportunities becoming limited in most schools</td>
</tr>
<tr>
<td>- Improvement of educational facilities</td>
<td>Facilities improved</td>
<td>Facilities improved in some schools but mostly financed by donor agencies</td>
</tr>
<tr>
<td>- Develop relevant curricula</td>
<td>Curricula attuned to recent dev't.</td>
<td>-CHED has not done evaluation of forestry schools -Revision of forestry curriculum takes time</td>
</tr>
<tr>
<td>- Recruitment of quality students</td>
<td>Recruitment system in place</td>
<td>Most schools do not have a recruitment system</td>
</tr>
<tr>
<td>- Provision of scholarship/financial assistance to students</td>
<td>Scholarships in place</td>
<td>Scholarships becoming limited. Some schools tap congressional funds</td>
</tr>
<tr>
<td>b) Establishment of Regional &amp; provincial training centers</td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Regional training centers</td>
<td>13 RTCs by CY 2000</td>
<td>11 RTCs established but most need renovation</td>
</tr>
<tr>
<td>- Provincial training centers</td>
<td>70 PTCs by CY 2000</td>
<td>None established so far</td>
</tr>
<tr>
<td><strong>Extension and Communication Component</strong></td>
<td></td>
<td></td>
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<tr>
<td>c) Enhance DENR’s capability in in-service training</td>
<td>Capability developed</td>
<td>HRMS personnel believe they have the skills but has inadequate logistics and equipment</td>
</tr>
<tr>
<td>d) Establish IEC coordinating body in the DENR</td>
<td>IEC body established</td>
<td>Public Affairs Office (PAO) &amp; regional PAO established but there is very little integration of IEC activities</td>
</tr>
<tr>
<td>e) Provide sufficient trainings to DENR field staff</td>
<td>Sufficient trainings provided</td>
<td>Significant in-service trainings provided but DENR personnel express the need for more trainings</td>
</tr>
<tr>
<td>f) Provide sufficient trainings to LGUs, NGOs, &amp; POs</td>
<td>Sufficient trainings provided</td>
<td>Some trainings provided but more trainings were identified specially by the LGUs and POs</td>
</tr>
<tr>
<td>g) Provide support services to other stakeholders</td>
<td>Services delivered</td>
<td>DENR provides a lot of services to its clientele. However, there is inadequate information on recent forest policies, marketing assistance, standard procedures for getting permits and requirements and land use maps</td>
</tr>
<tr>
<td>h) Strengthen IEC using different media</td>
<td>IEC strengthened</td>
<td>Significant gains in IEC achieved using different media. There is heightened awareness among LGUs, NGOs and POs to sustainably manage forest resources. However, IEC has failed beyond awareness raising and motivate stakeholders to participate in forest development and protection</td>
</tr>
</tbody>
</table>

**Funding Requirement**

<p>| i) Funds required for IEC and | Ps. 3,300 million | Initial data in regions 2 &amp; 6 indicate a general |</p>
<table>
<thead>
<tr>
<th>Objectives/Strategies/ Activities</th>
<th>Targets</th>
<th>Accomplishments/ Status</th>
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<tbody>
<tr>
<td>Training</td>
<td></td>
<td>increase in GOP budget for IEC and training up to CY 2000 but a significant decline in allocation started in CY 2001 to 2002</td>
</tr>
</tbody>
</table>
2.8.4 Problems, Issues and Concerns

The inadequacies in the attainment of MPFD objectives could be traced to certain problems, issues and concerns that constrained DENR and other institutions from effectively implementing the planned activities and strategies in the forestry master plan. Most of these problems are policy related while others are institutional. As in the past, funding constraints was always a problem. Among the problems, issues, and concerns identified are as follows:

- The quality of forestry education remain low

  This problem continue to persist mainly due to proliferation of forestry schools and the difficulty of adjusting/revising forestry curriculum to make it responsive to recent developments and policies in forestry. Among the contributory conditions to this problem are as follows:

  o Proliferation of forestry schools

    The proliferation of forestry schools dissipates available resources, hence, less funds for improvement of facilities as well as for faculty development, research and extension. As a result, the quality of teachers/professors including the students suffer. During the last ten (10) years the average percentage of Board passers is only 40% with the highest percentage of 58.36% recorded in 1995. Many forestry schools have zero passer in the last board examinations indicating the quality of forestry education they offer to students.

  o Curricula not responsive to recent developments in forestry

    The curricula of many forestry schools could hardly catch up with developments in the forestry sector. There is also no regular interactions/discussions among the academe, DENR, private practitioners and the business groups, whereby the needed expertise in the forestry sector could be articulated and incorporated in the forestry curricula.

- Insufficient training for DENR, LGUs, POs and NGOs

  While the DENR conducts a lot of trainings to its field staff and to some extent to POs, LGUs and NGOs, most of those interviewed by the study team expressed the need to have more trainings. This was specially mentioned by most LGU and PO personnel. Among the additional trainings identified concerns orientation on recent policies, IEE preparation, formulation of community resource management framework (CRMF) plan, para legal training, computer training, presentation skills enhancement, land use planning and others. Insufficient funds and training facilities/logistics and inadequate manpower have all contributed to the inadequate manpower development in the forestry sector. The absence of an integrated training plan has also complicated the situation. Each sector/unit in the DENR plans and implement its own training program which the human resources management sector (HRMS) merely consolidate. While this may be advantageous for the sector, this practice is inefficient since the use of training funds is not maximized.

- Weak information, extension and communication services

  Without proper understanding of the importance of forestry in their lives, it is difficult to motivate the general public to participate in forestry development activities. However, more than providing information on the value of the forests, the various stakeholders must understand their role in forestry development efforts, where they can participate and the requirements for participation. Unfortunately, the current IEC efforts are not focused on this perceived need of the general public. There are at least two (2) indications that forestry IEC services has not been very effective. First, there is weak legislative support to the forestry sector. Secondly, private sector participation in forest development and rehabilitation has been dismally low.
Some of the causes for the inadequacies in effectively implementing the IEC component of the forestry master plan are enumerated as follows:

- Negative Public Perception on the Forestry Sector
- Weak Linkages with Advocacy Groups and Other Stakeholders in Forestry IEC
- Inadequate Information and Unclear Procedures/Requirements for Participation in Forest Development Programs
- Inadequate Trained IEC Personnel
- Lack of an Integrated IEC Plan
2.9 M & E, and Communications

2.9.1 Introduction

Monitoring and evaluation (M & E) are two closely linked steps of an activity or process meant to promote accountability for achieving expected results form a policy, plan, programme, project or activity. Monitoring and evaluation should be carried out at all these levels as a continuous process, for providing correctional measures. Making policies and failing to act on then is a serious default, and can have a negative impact on the entire policy field. At the activity level, performance evaluation can identify inadequacies. There are instances where performance evaluation has clearly identified management inefficiency and financial loss.

Performance audits, M & E and periodical assessments are an essential aspect of post-planning process to check on the adherence to the plan, to identify difficulties encountered and to make necessary corrective measures or modifications.

Even well prepared plans often go wrong due to lack of necessary co-ordination (vertical and horizontal), causing weak links or even broken links, resulting in poor performance and often, negative results. Active co-ordination at, and between, various levels – international, national and local, involving funding sources, technical assistance agencies, trade and marketing institutions, planning and administrative bodies, private enterprises, NGOs, local organizations and community representatives is an essential part of plan implementation process, involving M & E.

A clear set of criteria and indicators for the different types of forests/forestry and systems of management can serve as very useful tools for conducting M & E.

On the other hand, communications is a relevant two-way process of providing information and communicating intentions from the central level to field level to target clientele across subsectors and back.

2.9.2 MPFD Assessment

As provided in the 1990 MPFD, the goal of M & E is the achievement of economy, efficiency and effectiveness in carrying out the various tasks set for a given development program, and the attainment of impacts envisaged in the program. The objectives are:

- To improve performance of programs, projects or activities by generating and providing timely project information to relevant users and increasing peoples communication to DENR staff, and
- Evaluate project results and improve future planning processes by measuring effects and impacts and analyzing factors affecting performance as affected by prevailing conditions.

The program components include a reporting system indicating measurable performance indicators, outputs, effects and impacts, validation of reported accomplishments, independent check by external and unbiased parties, and evaluation mechanisms on different field level units. All of these can be done internally with minimum additional funding required. However, a fund was proposed for the purchased and continuing interpretation of satellite data as well as its regionalization.

The plan is satellite survey once in five (5) years from 1991-2015. The program cost is Php 10.9 million for each of the 5-year period. However, None has been budgeted for the past three 5-year periods since 1991. Instead, the DENR resorts and rely on traditional “manual” GIS which do not provide reliable information on land use changes as inputs for monitoring. In the long run, “manual” GIS is inefficient and ineffective. An alternative is to distribute the Php 10.9 million to the fifteen (15) DENR regional offices and divide it further to the five (5) years. As an annual budget in the Work and Financial Plan (WFP) of the 15 regional offices, the amount when divided proportionally will only amount in the neighborhood of thousands of pesos.
The concerned staff in the central office and planning units in the field office can retrofit with added resources in terms of computer hardware and software. Satellite imagery or data can be budgeted as a whole in the FMB or in the National Mapping and Resource Information Authority (NAMRIA).

On the program requirements of the MPFD, the design is at par with current best practices of forest management in developed countries. What is only needed is the clarity of policy that the basic resource in forest management is the forestland. In other words, the other forest resources are dependent on the productivity of the forestlands, that the forestry sector must be first a land management agency before it becomes a resources management agency, especially in terms of products like timber. Davis (1976) although finding a lot of controversies in the interpretation of the Multiple Use and Sustainable Yield Act of 1960 of the USA, clearly stated that the Forest Service of the USDA, is a land management agency. Our own PD 705 (1975) adopted multiple uses of forestlands and such lands must be delineated and classified for their capable and suitable uses. This point of focus must not be confused with the priority umbrella program in the MPFD which is people-oriented forestry. In terms of hierarchy, the forms of forestland use management and the need of the Filipino people for a people oriented forestry program is both on top of the resource- people need hierarchy. The MPFD programs are centered both in conservation and development to meet the needs of the Filipino people must have a viable and healthy, sustainable forestland as a resource base. Striking the balance as Davis (1976) puts it, is a “long struggle to attain unity and some desirable people-land balance in a difficult situation”.

In their Search of Excellence by Peters and Waterman, Jr. (1982) describe the success of excellent companies:

The term “organization” thus suggests a certain bareness, a lean, no-nonsense system of consciously coordinated activities. It refers to an expendable tool, a rational instrument engineered to do a job. An “institution”, on the other hand, is more nearly a natural product of our social needs and pressures—a responsive and adaptive organism… The terms institution, organizational character, and distinctive competence all refer to the same basic process—the transformation of an engineered, technical arrangement of building blocks into a social organism…. Organizations become institutions as they are infused by values …The infusion produces a distinct identity. Where institutionalization is well advanced, distinctive outlooks, habits and other commitments are unified, coloring all aspects of organizational life and lending it a social integration that goes well beyond formal coordination and command.

What is very real is that the DENR as a whole is performance driven with the Key Result Area (KRA) System of success measurements. In an official visit to the World Bank, Washington D.C., USA in 1996, this reporter was attracted by a Performance Measurement Chart (Figure 4) on display on the wall in one of its offices. Essentially, it shows the cycle of performance measurement and reward. What is eye catching is the arrow showing a TODAY which is an inward focus and a TOMORROW which is an outward focus. It can be interpreted that the arrow does not shoot abruptly for TOMORROW or the future. For TODAY, it shows an inward focus to the organization with the points on results and cost effectiveness. For TOMORROW, it shows an outward focus with the important points of values of clients/stakeholders and the teamwork with institutional partners or co-managers. With this interpretation of the focus arrow, the FMB or the DENR as a whole has to pursue further up the TOMORROW focus in the KRA system, by formulating M&E indicators that will be responsive to clients/stakeholders and the teamwork, especially those from outside institutions.
These policy directions on Communications, M & E System need to be institutionalized. As a major policy and program of the MPFD, forest management has to veer away from the present attention given to licensing/permitting for the use of forestlands. Rather proper forestland use management which is the basic resource must be the over-riding goal (with people-oriented forest management as the main program and strategy). This is consistent with the DENR's overarching framework of Watershed and Ecosystems Management (WEM) which is a land use management with the watershed as the spatial or land unit.

Since the proposed major intervention in the MPFD is to retrofit in the forestry sector especially the FMB, the foremost need is to plan on the means and ends of achieving the long-term and over-riding goal of sustainable forest management. The planning tool that is very applicable is the logical framework (logframe). The PCARRD-DOST-DENR-FMB-DA-UPLB-CFNR-FDC/ENFOR (1999) has the Guidelines for Watershed Management and Development in the Philippines, a concise discussion on the subject of logical framework. From the same is a reproduction of a 4x4 matrix showing the logical relationships of the vertical and horizontal parts shown below as Table 2.20. From the same source also is reproduced as Table 2.21 showing the definitions and examples of what are the parts of the logical framework matrix.

Table 2.20. The logical framework matrix.

<table>
<thead>
<tr>
<th>Narrative Summary</th>
<th>Objectively verifiable indicators/success criteria</th>
<th>Means of verification</th>
<th>External factors/Key Assumptions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Goal</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Purpose</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Outputs</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Inputs</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 2.21. Definitions and examples.

<table>
<thead>
<tr>
<th>Term</th>
<th>Summary Definition</th>
<th>Examples</th>
</tr>
</thead>
<tbody>
<tr>
<td>Inputs</td>
<td>Resources necessary to perform project activities</td>
<td>Funds, personnel, equipment, other materials</td>
</tr>
<tr>
<td>Activities</td>
<td>Tasks and operations carried out by project personnel to transform project inputs into output</td>
<td>Setting up tree nursery, conducting farmer training sessions, preparation of training material</td>
</tr>
<tr>
<td>Outputs</td>
<td>Specific results produced by the management and use of project inputs</td>
<td>No. of farmers trained, no. of sets of training manuals produced, no. of ha rendered irrigable</td>
</tr>
<tr>
<td>Purpose</td>
<td>What is expected of a project in development terms as a result of the outputs produced. Whilst purpose is the motivation behind a project’s outputs, it falls outside direct project management control and equates with end of project status</td>
<td>Improved crop yields/productivity, total production increase, are rehabilitated</td>
</tr>
<tr>
<td>Goal</td>
<td>The ultimate objective for which the project is undertaken. Its realization depends critically on the interaction of various external conditions with the project’s purpose(s), upon which project authorities have little or no control and equates with final impacts, which may be manifest outside project investment period</td>
<td>Improved incomes or nutritional status, decreased child mortality, environmental degradation stopped</td>
</tr>
<tr>
<td>Objectivey</td>
<td>Set of criteria which demonstrate in concrete terms the results achieved. Each indicator must be objectively verifiable in that different independent observers would come to the same conclusion as to the status of achievement.</td>
<td>No. of training sessions held, tons of seed distributed, percent of farmers adopting, ha of land reclaimed</td>
</tr>
<tr>
<td>verifiable</td>
<td></td>
<td></td>
</tr>
<tr>
<td>indicators</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Means of</td>
<td>The means, methods and sources which permit objectively verifiable indicators to be measures in precise terms</td>
<td>Examining monthly records of farmer cooperatives, reviewing quarterly reports of district extension supervisors, periodic or ad-hoc field checks/ farm surveys</td>
</tr>
<tr>
<td>Verification</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>


According to the MPFD (1990), the FMB administers about 53% of the total land area of the Philippines. Legally, as per LOI 609, the forestland to alienable and disposable land is 40-60%. FMB has also the highest personal complement of 13,000 personnel or more than ½ of the total 25,000 personnel of the entire DENR.

Communication within the DENR itself is a large-scale one. Much more of communication is certainly needed for DENR to achieve its service delivery function. In a large bureaucracy like the DENR, it has to depend on a reporting system. Since this is the case, and in other not to clutter information going up
to the hierarchy of decision makers and policy makers, a system of screening of only the information needed at each administrative level going up has to be done. For external communication, the communication plan has to be focused on what the different public interest groups has to know.

Normally, in the matter of policy directives from top management to the CENRO level this widens or is elaborated further from top to bottom while reports of input-output of information need, tapers from the bottom to top management. This is graphically illustrated in Figure 2.5 as an “Information Pyramid cited by Mendoza, M.N. and Jose H. Magpantay (1997).

![Figure 2.5. The information pyramid.](image)

The environmental quality indices at the top of the information pyramid are summary measures of the state of environment based on individual indicators. The aggregative measures of indices are supposed to render them more readily useful for the decision making than individual indicators. However, the same IEMSD report expresses preference to work with indicators, rather than indices, claiming that indicators must be tested first for reliability before aggregating them to indices. Whether they are indices or indicators, either are intended as information needs to different audiences like policymakers, decision makers, planners, stakeholders or the general public.

Devoting a chapter on Information as a Management Tool in their book, Uphoff, N, Milton J. Esman, and Anirudh Krisna (1998) presented an understanding of information in hierarchical terms as quoted below:

“Data are the most elementary descriptors of physical or social reality. By themselves, they make little sense unless and until they are organized into information, which in turn needs to be integrated and structured into knowledge to be really useful. The transformation from knowledge into wisdom, which is the highest achievement, is something for which we still have no rigorous or reliable methods, unfortunately”.

In the FMB and DENR foreign assisted projects, it has been observed that M & E is invariably a component of the planning and implementation of projects. While this is the case, Uphoff, N. et al (1998) explained that “MIS be designed to secure management requirements rather than simply suit donor agencies’ ideas of what is appropriate.”

The Coastal and Marine Management Office (CMMO) created under DAO 08 2002, in their guide (2003) for M & E has presented two types of monitoring indicators with their parts and elements as shown in Figure 2.6.
If we put this figure in the context of MPFD information needs and the audiences it serves according to Margoluis and Salafsky (1998), the process indicators of input and output are principally the information need of offices implementing the MPFD and the outcome and impact indicators are the concern of other stakeholders or the public in general.

Simpson, S. and Sahlee Bugna (2001), in support of the NIPAS implementation of the DENR, presented methods in monitoring biodiversity. These methods are 1) Field Diary, 2) Photo Documentation, 3) Transect Walk and lastly, by 4) Focus Group Discussion. All methods are applicable as standard methods not only to biodiversity rangers and field officers but to all forestland rangers and workers. Forest protection areas especially the vulnerable areas or “hotspots” are in the yet to be delineated forestland boundaries. Since these areas are not delineated, intrusion as well as non-conforming land uses is a big problem. The changes in these critical forestland edges are indicators of positive or negative changes, or trends in the longer term.

Actually, foreign assisted projects are required and therefore employ M & E and MIS practices of the Donors or Banks. It is however emphasized that like any other government agency, it must follow the reporting and monitoring requirement of oversight agencies like the NEDA, DBM, COA, etc.. Presently the DENR is drafting in compliance with these oversight agencies, the ENR Sector for the Rural Development Logical Framework 2003, the major final outputs, its indicators, and timetable. The drafting started last January 2003 by the PPSO of the DENR and is expected to be completed and in place by the end of 2003. The inclusion of the updated or retrofitted MPFD in the DENR’s major final output (MFO) in the ENR sector is very critical in terms of policy and funding support.

To comply with this Rural Development Logical Framework, informed sources at the DENR disclosed that in order to come out with a fast inventory and characterization of forest resources (and other resources), the DENR plans to purchase the latest (2003) SPOT coverage of the Philippines. Accordingly, this SPOT imagery or data has a 5 meter ground resolution and will have a total cost of Php 67 million. The earlier mentioned cost of thePhp 10.9 million for the 5-year periods is very much lower which is surmised to be different, hence difference in the costs. What is important is satellite survey is generally accepted to be fast and cost-effective. FMB Director R.T. Acosta informed this reporter last July 2003 that the NCIP has purchased thru the NAMRIA the latest Philippine Landsat images to characterize ancestral domain/land areas which the FMB can share for M&E purposes. According to NAMRIA this satellite coverage will cost the NCIP Php 1.5 million.

Figure 2. 6. Showing types of monitoring indicators for Coastal Resource Management (CRM).

MONITOR ACTIVITIES AND EFFECTS TO BUILD CAPACITY TO PLAN AND IMPLEMENT CRM

MONITOR ACTIVITIES AND EFFECTS TO BUILD CAPACITY TO PLAN AND IMPLEMENT CRM

INPUT INDICATOR

OUTPUT INDICATOR

IMPACT INDICATOR

OUTCOME INDICATOR

MONITOR BIO - PHYSICAL AND SOCIO - ECONOMIC CHANGES IN COASTAL AREAS RELATED TO COASTLINE CONDITIONS

MONITOR IMPLEMENTATION OF CRM PLANS AND PROGRAMS

Source: CMMO Establishment and Guidelines for Annual Monitoring and Evaluation of Coastal Resources Management Plans and Programs for Certification. 2003. DENR, Quezon City
Communication, M & E System is very essential to forest management in the function of controlling. Measurement of actual performance against planned goals and objectives by the M & E is feedback to planning to enhance successful implementation. To institutionalize capability in the forestry sector for Communication, M & E System, training of pertinent line offices and staff is helpful. The Project Development and Evaluation Division (PDED) of the PPSO has already trained in M & E sometime in 2000, using mainly as text the Measures of Success: Designing, Managing and Monitoring Conservation and Development Projects by Richard A. Margoluis and Nick N. Salafsky (1998). For controlling as a function of management the Forestry Handbook, second edition, edited by Wenger, K.E. (1984) is recommended.

These trainings can be done as part of staff development, which is normally provided for in the annual budget of all units of the DENR.

There are in the DENR and FMB units that can be retrofitted to simplify and strengthen the Communication, M & E System of the MPFP. In the DENR, the whole Planning and Policy Studies Office and the Management Information and Decision Support Office can provide the information needs of the Department. At the FMB, the Water Resources Development Project, the Economics Division, and the Criteria and Indicators Unit can complement each other to decide both the internal and external information needs of the FMB. Presently, this information needs of the FMB can be aggregated at the Economics Division.

2.9.3 Issues and Constraints:

The following is a summary of issues regarding M & E and Communications:

- The need to institutionalize FMB firstly, as a land management agency and secondly, as a resource management agency.
- As a staff bureau, FMB has no sufficient funding for its plans and programs.
- Frequent pressures and clamor of different public interest groups for their need of information from the forestry sector.
2.10 Forest-Based Industries and Forest Products Utilization Sector

2.10.1 Importance to the country (economic, environment, etc.)

The Master Plan for Forestry Development (MPFD) indicated that for almost two decades prior to its formulation, agriculture, logging, mining, and fisheries together contributed annually almost P15 billion to the country’s gross value added. This was almost doubled in 1988 (P25 billion). The share of logging was 12.5% in 1970 but dramatically plummeted to only 2.3% in 1988 (MPFD,1990).

Table 2.22 shows the gross national product (GNP) and gross value added (GVA) in forestry as well as the share of forestry to the GNP both at constant and current prices. The GVA and percentage share of forestry in the GNP has been declining since the 70’s. The percentage share of forestry in GNP dropped from 2.48% in 1975 to 0.83% in 1990 and further dropped to only 0.10% in 2000 (PFS,2000). This indicates the decreasing importance of forestry as an economic sector in the country.

In 1980 three processed wood products were among the top ten principal exports of the country, namely lumber (US$175 million) which occupied the sixth position followed by plywood (US$110 million) at eighth and logs (US$87) at tenth. Together (US$372 million) they occupied the fifth position following semiconductor devices (US$492 million) (PFS,1980). In 1990 forest products were no longer in the top ten exports. In 2001, among the forest based export products furniture was number one with an export value of US$209.95 million, lumber occupied sixth position (US$15.96 million), while plywood and other veneered panels was eighth (US$3.16 million), (PFS 2001).

Table 2.22. Gross national product (GNP) and gross value added (GVA) in forestry (mil. pesos).

<table>
<thead>
<tr>
<th>Year</th>
<th>At Constant Prices</th>
<th></th>
<th></th>
<th>At Current Prices</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>GNP</td>
<td>GVA in forestry</td>
<td>%Share to GNP</td>
<td>GNP</td>
<td>GVA in forestry</td>
<td>%Share to GNP</td>
</tr>
<tr>
<td>2001</td>
<td>1,051,157</td>
<td>913</td>
<td>0.09</td>
<td>3,853,301</td>
<td>2,323</td>
<td>0.06</td>
</tr>
<tr>
<td>2000</td>
<td>1,016,131</td>
<td>1,372</td>
<td>0.14</td>
<td>3,496,863</td>
<td>3,383</td>
<td>0.10</td>
</tr>
<tr>
<td>1999</td>
<td>968,334</td>
<td>1,704</td>
<td>0.18</td>
<td>3,136,168</td>
<td>4,056</td>
<td>0.13</td>
</tr>
<tr>
<td>1998</td>
<td>931,127</td>
<td>897</td>
<td>0.10</td>
<td>2,794,068</td>
<td>2,215</td>
<td>0.08</td>
</tr>
<tr>
<td>1995</td>
<td>825,164</td>
<td>1,527</td>
<td>0.19</td>
<td>1,958,932</td>
<td>2,746</td>
<td>0.14</td>
</tr>
<tr>
<td>1990</td>
<td>720,058</td>
<td>7,320</td>
<td>1.02</td>
<td>1,075,056</td>
<td>8,907</td>
<td>0.83</td>
</tr>
<tr>
<td>1985</td>
<td>847,867</td>
<td>706</td>
<td>0.80</td>
<td>597,743</td>
<td>10,665</td>
<td>1.82</td>
</tr>
<tr>
<td>1980</td>
<td>92,532</td>
<td>1,386</td>
<td>1.50</td>
<td>264,532</td>
<td>6,743</td>
<td>2.55</td>
</tr>
<tr>
<td>1975</td>
<td>68,280</td>
<td>1,265</td>
<td>1.85</td>
<td>114,438</td>
<td>2,833</td>
<td>2.48</td>
</tr>
</tbody>
</table>

Source: Philippine Forestry Statistics, FMB, DENR, 1998

The estimated forest charges from 1990 onwards to 2001 are shown in Table 2.23. The amount of forest charges in 1991 (P806.15 million) was almost double that of 1990 (P460.55 million). However, the forest charges started to decline from 1996 (P288.07 million) to 2001 when the forest charges were estimated to be P164.30 million. This reflects the continuing reduction in the volume of logs harvested from the natural forest which was recorded to be only 0.160 million cu m in 2001.
Table 2.23. Estimated forest charges on logs harvested ('000 pesos)

<table>
<thead>
<tr>
<th>Year</th>
<th>Charges</th>
</tr>
</thead>
<tbody>
<tr>
<td>1990</td>
<td>460,550</td>
</tr>
<tr>
<td>1991</td>
<td>806,154</td>
</tr>
<tr>
<td>1992</td>
<td>466,688</td>
</tr>
<tr>
<td>1993</td>
<td>497,385</td>
</tr>
<tr>
<td>1994</td>
<td>544,564</td>
</tr>
<tr>
<td>1995</td>
<td>574,500</td>
</tr>
<tr>
<td>1996</td>
<td>288,069</td>
</tr>
<tr>
<td>1997</td>
<td>189,659</td>
</tr>
<tr>
<td>1998</td>
<td>190,760</td>
</tr>
<tr>
<td>1999</td>
<td>165,200</td>
</tr>
<tr>
<td>2000</td>
<td>135,100</td>
</tr>
<tr>
<td>2001</td>
<td>164,301</td>
</tr>
</tbody>
</table>

Source: Philippine Forestry Statistics

2.10.2 Profile of the Forest-based Industries

2.10.2.1 Number of license agreements and area covered

In 1990 more than 4 million hectares of forestlands were under agreements of various kinds with the private sector. Close to 3.7 million ha were under TLAs, while IFMA/ITPLA had 0.30 million ha, 0.11 million ha were under agro-forestry farms, and 0.013 million ha under tree farms (Table 2.24). In that year there were 97 TLAs, 81 IFMA/ITPLA holders, 101 tree farms and 94 agro-forestry farms. Since then, there was erosion of the number of TLAs and a corresponding decrease of forestlands covered by them. In 1995 there were only 41 TLAs covering 1.6 million ha. This further decreased to 19 in 2000 (and remained the same in 2001) with an area of only 0.91 million ha. On the contrary, there was a tremendous increase in the number of IFMA/ITPLA holders, 248 covering 0.538 million ha. Although the number of IFMA/ITPLAs decreased in 2000 to only 184, the area covered slightly increased. In 1995 to 2000, the number of tree farms increased with a slight increase in area. Since 1990, the number of license agreements has been slowly decreasing and area covered by all licenses decreased by 63%.

Table 2.24. Industry profile (license agreements).

<table>
<thead>
<tr>
<th>Types of Agreements</th>
<th>1990</th>
<th>1995</th>
<th>2000</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Number</td>
<td>Area (000 ha)</td>
<td>Number</td>
</tr>
<tr>
<td>TLA</td>
<td>97</td>
<td>3,762</td>
<td>41</td>
</tr>
<tr>
<td>IFMA/ITPLA</td>
<td>81</td>
<td>304</td>
<td>248</td>
</tr>
<tr>
<td>Tree Farm</td>
<td>101</td>
<td>13</td>
<td>128</td>
</tr>
<tr>
<td>Agro-forestry Farm</td>
<td>94</td>
<td>110</td>
<td>84</td>
</tr>
<tr>
<td>Total</td>
<td>4,189</td>
<td>2,253</td>
<td>1,568</td>
</tr>
</tbody>
</table>


These changes are reflective of the policy to terminate TLA as a mode of managing forestlands and resources to IFMA in consonance to the provisions of the Constitution that allow only co-production, joint venture, and production sharing agreement. IFMA is a production sharing agreement.

2.10.2.2 Number and Annual Log Requirements of Processing mills

Table 2.25 shows the number and annual log requirements (ALR) of various wood processing mills over a 10-year period. The number of processing mills decreased over this period except veneer mills, which increased from 15 in 1990 to 19 in 2000 with an increase of about twice the ALR recorded in 1990.
Table 2.25. Industry profile (processing mills).

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>No. ALR</td>
<td>No. ALR</td>
<td>No. ALR</td>
<td>No. ALR</td>
</tr>
<tr>
<td>Regular Sawmills</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Active</td>
<td>152</td>
<td>2.446</td>
<td>78</td>
<td>1.523</td>
</tr>
<tr>
<td>Inactive²</td>
<td>NA</td>
<td>NA</td>
<td>23</td>
<td>0.364</td>
</tr>
<tr>
<td>Mini-sawmills</td>
<td>174</td>
<td>0.596</td>
<td>52</td>
<td>0.164</td>
</tr>
<tr>
<td>Veneer mills</td>
<td>15</td>
<td>0.315</td>
<td>6</td>
<td>0.081</td>
</tr>
<tr>
<td>Plywood mills</td>
<td>45</td>
<td>4.528</td>
<td>31</td>
<td>2.089</td>
</tr>
<tr>
<td>Total ALR</td>
<td>7.885</td>
<td>4.230</td>
<td>3.955</td>
<td>3.567</td>
</tr>
</tbody>
</table>

1. Annual log requirement in million cu m
2. Total regular sawmills less active regular sawmills


Active regular sawmills decreased in number from 152 with ALR of about 2.446 million cu m in 1990 to only 45 in 2000 and 44 in 2001 with ALR of 0.742 million cu m in 2000 and 0.777 million cu m in 2001. Mini-sawmills likewise decreased from 174 (ALR of 0.596 million cu m) to only 70 (ALR of 0.808 million cu m) in 2000. However, the number increased to 124 in 2001 but decreased in ALR to only 0.397 million cu m.

Plywood mills decreased from 45 in 1990 with ALR of 4.528 million cu m to 27 in 2000 with a ALR of 1.224 million cu m. The number of plywood plants increased in 2001 with a slight increase in ALR to 1.242 million cu m. On the other hand, veneer mills increased from 15 (ALR of 0.315 million cu m) in 1990 to 19 with ALR of 0.559 million cu m in 2001.

2.10.2.3 Production, exports and imports of major wood products

Log production in 1990, 1995 and 2000 is shown in Table 2.26. Over the 10-year period covered log production decreased from 2.503 million cu m to only 0.80 million cu m or a reduction of 68%. Since the contribution of logs coming from forest plantations was not segregated from the production in 1990, the percentage contribution of plantations in the total log production cannot be determined. However, log production from natural forests in 2000 was 0.23 million cu m compared to 0.57 million cu m from plantations (71%). The main reason for the decreasing volume of log production from the natural forests is the decreasing commercial forest area. In addition, in 1991 a ban in harvesting from natural forests was imposed (DAO 24, 1991). Concomitantly, the area of harvestable plantations is increasing accounting for the higher volume of plantation grown logs.

Table 2.27 shows the production, exports and imports of major wood products in 1990, 1995 and 2000. Production of lumber and plywood has been decreasing since 1990. The reduction in production from 1990 to 2000 for lumber was significant, more than 82% while the reduction in plywood production was almost 30%. Blockboard increased in production by almost 55%. There were no data on the production of particleboard and fiberboard during the period.

The export of lumber during the 10 year period has been increasing from 0.077 million cu m in 1990 to 0.120 million cu m in 2000. This is due to the increasing lumber production of plantation grown species whose export is encouraged by government. The export of plywood has likewise been decreasing from 0.176 million cu m in 1990 to less than a thousand cu m in 1995 and only 2,000 cu m in 2000 or a
Table 2.26. Projected and actual production of forest products

<table>
<thead>
<tr>
<th>Products</th>
<th>1990</th>
<th>1995</th>
<th>2000</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Projection</td>
<td>Actual</td>
<td>%</td>
</tr>
<tr>
<td>Log production¹</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Natural forest</td>
<td>3,680,000</td>
<td>2,503,000</td>
<td>6</td>
</tr>
<tr>
<td>Plantations</td>
<td>1,890,000</td>
<td>2,290,000</td>
<td>4</td>
</tr>
<tr>
<td>Total</td>
<td>5,570,000</td>
<td>2,503,000</td>
<td>4</td>
</tr>
<tr>
<td>Lumber</td>
<td>953,000</td>
<td>841,000</td>
<td>8</td>
</tr>
<tr>
<td>Veneer</td>
<td>49,000</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Plywood</td>
<td>547,000</td>
<td>397,000</td>
<td>7</td>
</tr>
<tr>
<td>Rattan poles²</td>
<td>19,266</td>
<td>17,457</td>
<td>8</td>
</tr>
<tr>
<td>Bamboo³</td>
<td>984</td>
<td>307</td>
<td>1</td>
</tr>
</tbody>
</table>

¹ cubic meter  ² 2 thousand lineal meters  ³ 3 thousand pieces  4 for both natural and plantation grown round wood  
Source: Philippine Forestry Statistics

Table 2.27. MPFD-projected demand, actual production, exports and imports of wood products

<table>
<thead>
<tr>
<th>Products</th>
<th>1990</th>
<th>1995</th>
<th>2000</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lumber (mil cum)</td>
<td>0.884</td>
<td>0.841</td>
<td>0.077</td>
</tr>
<tr>
<td>Plywood (mil cum)</td>
<td>0.547</td>
<td>0.397</td>
<td>0.176</td>
</tr>
<tr>
<td>Veneer (mil cum)</td>
<td>-</td>
<td>0.049</td>
<td>0.047</td>
</tr>
<tr>
<td>Blockboard (mil cum)</td>
<td>NA</td>
<td>0.017</td>
<td>NA</td>
</tr>
<tr>
<td>Particleboard (mil. Cum)</td>
<td>0.007</td>
<td>NA</td>
<td>NA</td>
</tr>
<tr>
<td>Fiberboard (mil kg)</td>
<td>49.0</td>
<td>NA</td>
<td>NA</td>
</tr>
</tbody>
</table>

¹ Million kg  
(a) Less than one thousand  

decrease of 98%. For particleboard, the country imported 29 million kg in 1995, however, this decreased to only 2.55 million kg in 2000. The import of fiberboard in 1995 was 45 million kg, which increased to 53 million kg in 2000. The increases in import of building materials can only be explained by increased construction during the period. This is supported by an increase in apparent consumption of lumber from 1995 to 2000.

2.10.2.4 Value of exported and imported wood products

While the production and export of logs and processed wood products are on the decline the imports of these commodities are increasing steadily over the last 12 years. The increase in log imports started in earnest in 1990 and has fluctuated from 300,000 to 900,000 cu m a year valued from US$41.4 to
127.4 million (Table 2.27). No significant imports of lumber were made before 1990. From an initial import 4,000 cu m in 1990, it has steadily increased with a high of more than 550,000 cu m in 1996 valued at US$161.97 million. The values of exported and imported logs from 1990 to 2001 are shown in Table 2.28.

In 1990, the Philippines exported more lumber that it imported. However, from 1995 onwards the country has been a net importer of lumber and the difference between the values of imports to exports ranged from US$ 59.35 million (2000) to US$ 138.78 million (1996). The reported imports of lumber in 2001 were 371,000 cu m valued at US$86.27 million. Likewise, import of veneer has climbed from an insignificant volume in the early 1990’s to more than 100,000 cu m in 2001 valued at US$26.37 million. The imports of plywood exceeded those of exports from 1996 to 2001 except in 2000. The Philippines has become a net importer of wood and wood products.

Table 2.28. Value of exports and imports of logs and major wood products (million USD).

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Logs</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Export</td>
<td>2.856</td>
<td>-</td>
<td>-</td>
<td>0.26</td>
</tr>
<tr>
<td>Import</td>
<td>41.408</td>
<td>82.036</td>
<td>127.412</td>
<td>117.821</td>
</tr>
<tr>
<td>Difference</td>
<td>-38.552</td>
<td>-82.036</td>
<td>-127.412</td>
<td>-117.551</td>
</tr>
<tr>
<td>Lumber</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Import</td>
<td>2.392</td>
<td>82.225</td>
<td>161.972</td>
<td>112.639</td>
</tr>
<tr>
<td>Difference</td>
<td>17.032</td>
<td>-67.564</td>
<td>-138.776</td>
<td>-90.787</td>
</tr>
<tr>
<td>Veneer</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Export</td>
<td>13.08</td>
<td>13.487</td>
<td>12.856</td>
<td>14.385</td>
</tr>
<tr>
<td>Import</td>
<td>0.105</td>
<td>8.057</td>
<td>26.424</td>
<td>27.569</td>
</tr>
<tr>
<td>Difference</td>
<td>12.975</td>
<td>5.43</td>
<td>-13.568</td>
<td>-13.184</td>
</tr>
<tr>
<td>Plywood</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Export</td>
<td>60.22</td>
<td>0.101</td>
<td>0.078</td>
<td>0.017</td>
</tr>
<tr>
<td>Import</td>
<td>1.814</td>
<td>0.128</td>
<td>0.673</td>
<td>0.651</td>
</tr>
<tr>
<td>Difference</td>
<td>58.406</td>
<td>-0.027</td>
<td>-0.595</td>
<td>-0.461</td>
</tr>
</tbody>
</table>

Table 2.28 . . . Continued.

<table>
<thead>
<tr>
<th>Products</th>
<th>1998</th>
<th>1999</th>
<th>2000</th>
<th>2001</th>
</tr>
</thead>
<tbody>
<tr>
<td>Logs</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Export</td>
<td>-</td>
<td>0.004</td>
<td>0.016</td>
<td>0.156</td>
</tr>
<tr>
<td>Import</td>
<td>54.874</td>
<td>69.45</td>
<td>54.34</td>
<td>44.707</td>
</tr>
<tr>
<td>Difference</td>
<td>-54.874</td>
<td>-69.446</td>
<td>-54.324</td>
<td>-44.551</td>
</tr>
<tr>
<td>Lumber</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Export</td>
<td>5.543</td>
<td>8.738</td>
<td>20.457</td>
<td>15.958</td>
</tr>
<tr>
<td>Import</td>
<td>71.188</td>
<td>116.772</td>
<td>79.81</td>
<td>86.271</td>
</tr>
<tr>
<td>Difference</td>
<td>-65.645</td>
<td>-108.035</td>
<td>-59.353</td>
<td>-70.313</td>
</tr>
<tr>
<td>Veneer</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Export</td>
<td>11.748</td>
<td>2.89</td>
<td>2.926</td>
<td>1.547</td>
</tr>
<tr>
<td>Plywood</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Export</td>
<td>0.343</td>
<td>0.343</td>
<td>2.056</td>
<td>0.2</td>
</tr>
<tr>
<td>Import</td>
<td>0.552</td>
<td>0.552</td>
<td>0.639</td>
<td>0.201</td>
</tr>
<tr>
<td>Difference</td>
<td>-0.571</td>
<td>-0.209</td>
<td>1.417</td>
<td>-0.001</td>
</tr>
</tbody>
</table>

2.10.2.5 Production and export of non-timber forest products

Table 2.29 shows the production and export of selected non-timber forest products (NTFP). These include the major NTFP such as bamboo, split and unsplit rattan, almaciga resin and elimi gum. Bamboo has extensive uses, such as for construction, furniture and handicraft manufacture. The production of this product from the natural forest has been consistent but a slight decreasing trend could be discerned. Similarly, the export volume dipped during the late 90’s but seem to be picking up again.

For rattan poles, production trend has been more or less constant despite the reduced potential areas for harvesting. The perception is that very little poles are coming out of the forest (Padiernos, 2003, Tesoro pers. comm.). While export of rattan poles has been banned since 1988 there were records of exports but these were insignificant.

Almaciga and elimi are exudates, from *Agathis philippinensis* and *Cannarium ovatum*, respectively, that have found international markets. The former is for the manufacture of paints and varnishes while the latter is valued for its essence in the manufacture of perfumes and similar products. In the case of elemi, there is practically no production data, however, there is a high amount of export during the last 15 years (Table 2.29). It is possible that the information has not been easy to capture.

2.10.3 The Furniture Industry

The furniture industry is one of the fastest growing industries of the country today. It had an export growth of 8 to 14% from 1995 to 1999. The total value of export furniture in 2000 was US$ 381.37 million (Table 2.30). The United States accounted for US$ 225.4 million (59%) of the value of exported furniture while the combined value of exports to European Union was only US$ 52 million. While the value of exports to the US looks impressive it accounted only 1% of US furniture exports (Forest Industries Assessment, 2001). The export performance of the industry of US$ 381.37 million looks insignificant when compared to the total furniture export market which is estimated to be US$ 52 billion, or a mere 0.73%. It also means, however, that the export market presents barely-tapped opportunities for the local furniture industry.

Compared to the other ASEAN countries, the Philippines ranks fourth in 1999 after Malaysia (US$1.3 B), Indonesia (US$1.2 B) and Thailand (US$0.85 B). China exported close to US$ 3.7 in the same year. The share of the wood, rattan and bamboo furniture in the export value of Philippine exports for 2000 is shown in Table 2.30.

The domestic market of furniture is difficult to assess because of the absence of records of sales unlike the export furniture, which is recorded in the Bureau of Customs. It is estimated that the domestic market for furniture and home furnishings is about PHP19 billion a year (Forest Industry Assessment, 2001). At the current exchange rate to the dollar, this would be about US$ 380 million or equivalent to the export value of furniture, thus the local market also presents good opportunities for expansion of the furniture industry.
Table 2.29. Production and export of selected non-timber forest products.

<table>
<thead>
<tr>
<th>Year</th>
<th>Bamboo¹</th>
<th>Rattan Split²</th>
<th>Rattan Unsplit³</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Prod</td>
<td>Export</td>
<td>Value</td>
</tr>
<tr>
<td>2001</td>
<td>537</td>
<td>30</td>
<td>36</td>
</tr>
<tr>
<td>2000</td>
<td>2,337</td>
<td>19</td>
<td>39</td>
</tr>
<tr>
<td>1999</td>
<td>984</td>
<td>4</td>
<td>6</td>
</tr>
<tr>
<td>1998</td>
<td>448</td>
<td>12</td>
<td>27</td>
</tr>
<tr>
<td>1997</td>
<td>163</td>
<td>6</td>
<td>14</td>
</tr>
<tr>
<td>1996</td>
<td>627</td>
<td>19</td>
<td>43</td>
</tr>
<tr>
<td>1995</td>
<td>307</td>
<td>9</td>
<td>22</td>
</tr>
<tr>
<td>1994</td>
<td>360</td>
<td>39</td>
<td>26</td>
</tr>
<tr>
<td>1993</td>
<td>475</td>
<td>10</td>
<td>6</td>
</tr>
<tr>
<td>1992</td>
<td>704</td>
<td>15</td>
<td>20</td>
</tr>
<tr>
<td>1991</td>
<td>892</td>
<td>23</td>
<td>49</td>
</tr>
<tr>
<td>1990</td>
<td>984</td>
<td>16</td>
<td>15</td>
</tr>
<tr>
<td>1985</td>
<td>644</td>
<td>17</td>
<td>37</td>
</tr>
<tr>
<td>1980</td>
<td>327</td>
<td>(a)</td>
<td>1</td>
</tr>
<tr>
<td>1974-75</td>
<td>226</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>1970-71</td>
<td>201</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

¹ Number of pieces, thousand  ² Kilograms, thousand  ³ Lineal meters, thousand  ⁴ Thousand US$

Source: Philippine Forestry Statistics.

Table 2.29. Continued.

<table>
<thead>
<tr>
<th>Year</th>
<th>Almaciga resin²</th>
<th>Elemi gum²</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Prod</td>
<td>Export</td>
</tr>
<tr>
<td>2001</td>
<td>520</td>
<td>204</td>
</tr>
<tr>
<td>2000</td>
<td>518</td>
<td>319</td>
</tr>
<tr>
<td>1999</td>
<td>298</td>
<td>336</td>
</tr>
<tr>
<td>1998</td>
<td>261</td>
<td>355</td>
</tr>
<tr>
<td>1997</td>
<td>310</td>
<td>381</td>
</tr>
<tr>
<td>1996</td>
<td>890</td>
<td>326</td>
</tr>
<tr>
<td>1995</td>
<td>1,059</td>
<td>328</td>
</tr>
<tr>
<td>1994</td>
<td>1,231</td>
<td>387</td>
</tr>
<tr>
<td>1993</td>
<td>576</td>
<td>382</td>
</tr>
<tr>
<td>1992</td>
<td>634</td>
<td>273</td>
</tr>
<tr>
<td>1991</td>
<td>780</td>
<td>363</td>
</tr>
<tr>
<td>1990</td>
<td>943</td>
<td>288</td>
</tr>
<tr>
<td>1985</td>
<td>380</td>
<td>600</td>
</tr>
<tr>
<td>1980</td>
<td>506</td>
<td>683</td>
</tr>
<tr>
<td>1974-75</td>
<td>546</td>
<td>884</td>
</tr>
<tr>
<td>1970-71</td>
<td>787</td>
<td>807</td>
</tr>
</tbody>
</table>

91
Table 2.30. Share wood, rattan and bamboo furniture in 2000 exports (US$ million).

<table>
<thead>
<tr>
<th>Raw Materials</th>
<th>Value</th>
<th>% Share</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wood</td>
<td>43.29</td>
<td>37</td>
</tr>
<tr>
<td>Rattan</td>
<td>118.02</td>
<td>31</td>
</tr>
<tr>
<td>Furniture parts</td>
<td>53.31</td>
<td>14</td>
</tr>
<tr>
<td>Metal</td>
<td>49.44</td>
<td>12</td>
</tr>
<tr>
<td>Stone</td>
<td>9.08</td>
<td>2</td>
</tr>
<tr>
<td>Bamboo</td>
<td>3.18</td>
<td>1</td>
</tr>
<tr>
<td>Other materials</td>
<td>2.16</td>
<td>1</td>
</tr>
<tr>
<td>Furnishings</td>
<td>1.71</td>
<td>1</td>
</tr>
<tr>
<td>Plastic</td>
<td>0.72</td>
<td></td>
</tr>
<tr>
<td>Buri</td>
<td>0.46</td>
<td></td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>381.37</td>
<td></td>
</tr>
</tbody>
</table>


The local furniture industry is estimated to be composed of about 15,000 manufacturers and subcontractors with only about 400 to 500 as exporters. Six-five (65%) percent of these are micro and small enterprises, 25% are medium scale and about 10% are large manufacturing firms. The current centers of the industry are Metro Cebu, Metro Manila and Pampanga but Mindanao especially Davao, Cagayan de Oro and Butuan are emerging as another center of furniture manufacture. The concerns of the furniture industry may be grouped into:

- Forest-based raw materials supply and sustainability
- Product design and development
- Manufacturing and sub-contracting, and
- Marketing and promotion

The barriers to raw materials supply and sustainability that have been identified include movement of raw materials, lack of familiarity in the use of plantation species, insufficient facilities for saw milling and drying of wood, lack of lumber grading system for plantation lumber, unavailable financing windows for investments in plantation establishment, high tariff on imported raw materials, and unstable supply abroad. In manufacturing and sub-contracting, among the identified issues include under-utilized capacities of manufacturers, lack of collaborative research on appropriate technologies, low labor productivity, lack of technical workers and middle managers and lack of confidence of owners and entrepreneurs to invest in the industry. The absence of a national industry promotions plan was scored as the main barrier in the marketing of Philippine furniture abroad.

2.10.4 The Handicraft Industry

The handicraft industry encompasses a diversified group of mostly micro enterprises producing an assortment of wares such as basketwork, shell craft articles, ceramics, metal wares, textiles, stone wares, wood crafts, hand made paper products, and others. Majority has a capitalization of less than PHP 1 million (PCHI, 2003) and less than 20 employees, most often the employees are family members, relatives and neighbors. Because of the diversity of their products and raw material base there are several industry associations within the sector such as the Ceramics Exporters Manufacturers Association (CREMA), the Federation of Handmade Paper Makers and Converters (FEHPA), the Christmas Decors Association of the Philippines (CAP), and the Philippine Chamber of Handicraft Industries (PCHI). However, these associations have realized that it is only by working together can their concerns be voiced and heard.
Collectively, their exports are impressive. From 1991 to 2000 their average annual export amounted to US$ 759.23 million, more than double that of the furniture industry. Table 2.31 shows the export value of handicrafts products:

In 2002, basketwork had a share of 25.68% of the total export of the sector, followed by textiles (18.35%), ceramics (11.30%), metal wares (10.64%), and woodcraft (9.67%). Handmade paper products had a 0.08% share of the total export value of the sector. Most of the products use mix-media (combination of raw materials). Basket wares can be solely of bamboo, rattan or vines or combination of these materials or it could have a metal base. Woodcraft products are not solely made of wood but in combination of bamboo or rattan with wood as the predominant material. Because of the use of mix media it is difficult to classify handicraft by raw materials used.

<table>
<thead>
<tr>
<th>Year</th>
<th>Gifts, Toys &amp; House wares</th>
<th>Fashion Accessories &amp; Leather Goods</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>2000</td>
<td>448.82</td>
<td>363.90</td>
<td>812.72</td>
</tr>
<tr>
<td>1999</td>
<td>454.31</td>
<td>321.08</td>
<td>775.39</td>
</tr>
<tr>
<td>1998</td>
<td>448.96</td>
<td>347.96</td>
<td>796.92</td>
</tr>
<tr>
<td>1997</td>
<td>473.86</td>
<td>339.67</td>
<td>813.53</td>
</tr>
<tr>
<td>1996</td>
<td>486.33</td>
<td>302.65</td>
<td>788.98</td>
</tr>
<tr>
<td>1995</td>
<td>491.14</td>
<td>353.75</td>
<td>844.89</td>
</tr>
<tr>
<td>1994</td>
<td>453.30</td>
<td>348.76</td>
<td>784.06</td>
</tr>
<tr>
<td>1993</td>
<td>402.04</td>
<td>311.12</td>
<td>713.16</td>
</tr>
<tr>
<td>1992</td>
<td>391.70</td>
<td>277.46</td>
<td>669.16</td>
</tr>
<tr>
<td>1991</td>
<td>336.96</td>
<td>256.48</td>
<td>593.44</td>
</tr>
<tr>
<td>Ave</td>
<td>436.94</td>
<td>322.28</td>
<td>759.23</td>
</tr>
</tbody>
</table>


Like most export products of the country the handicraft sector is beset with various problems, issues and concerns. It is facing steep competition from neighboring countries particularly China. To be more competitive in the local as well as in the international markets the industry must overcome its problems.

The Chamber of Handicraft Industries classified the industry’s concerns under 4 categories:

- Raw material supply and sustainability
- Product design and development
- Production efficiency, and
- Marketing and promotions

The specific concerns of the industry under raw material supply and sustainability include:

- Raw material mapping
- Resource exchange trade fair with parallel conferences and seminars
- Raw materials logistics centers in key areas such as Quezon/Laguna, Bacolod/Iloilo, Davao, Manila, and Bicol
- Training of material processors
- Industrially managed plantations of key indigenous materials
- Infrastructure on harvesting and transport of raw materials, and
- Financing for plantation development and for raw materials processing centers
For product design and development, the identified concerns are:

- Improved design infrastructure
- New product design using indigenous raw materials

For production efficiency, the relevant concerns are:

- Non-collateral based financing
- Manpower productivity training
- Establish complementation and networking among firms with similar products
- Improve managerial effectiveness

For marketing and promotions, the relevant concerns are:

- Address the issue of declining buyers
- Niche marketing
- Pursue lucrative domestic markets
- Diversify to non-traditional markets
- Develop a national industry promotions plan
- Conduct a country/industry imaging program

Among the issues and concerns of the handicrafts industry sector, those of material sustainability in so far as these raw materials are forest based can be addressed by the DENR with respect to producing these raw materials. Furthermore, the raw materials base of the industry even in the forestry sector are too varied and may not be of significant volume that it would be difficult for the DENR to address. Private enterprises can probably address some supply problems of the industry than government. Only the major raw materials such as wood, rattan and bamboo are further assessed in the report.

### 2.10.5 Assessment of the MPFD Programs on Forest Based Industries and Non-timber Forest Products

The MPFD identified two sub-programs within the forest-based industry sector and forest products utilization, namely, Wood Based Industries and Non-Wood Forest-Based Industries. Objectives and strategies were likewise identified for these two industry groups. For the purpose of this assessment, only a few significant strategies and the programs to pursue these strategies, which are felt to be crucial to industries’ growth and development, were reviewed.

For Wood Based Industries:

- Provision of long-term tenure of industrial permits
- Financial assistance in investments and retooling
- Improvement of infrastructures (electricity, communication, transport, training opportunities)
- Provision of incentives (tax reforms and loans)
- Provide new technologies
- Develop/expand the use of plantation wood and lesser used species
- Establish community-based industries
- Develop product standards
- Establishment of a Forest Industries Board

For Non-wood Forest-based Industries:

- Sustainable management of existing resources
• Utilization of heretofore noncommercial species
• Plantation development
• Improved access to resources by local communities
• Establishment of a national program on resources development

2.10.5.1 Projected versus actual production of major wood products

A study of the projections of the MPFD with respect to production logs and of major wood products and the actual production of these products indicate the extent to which the programs and projects have been implemented.

2.10.5.1.1 Log production

Table 2.32 shows the projected volume of log production for 1990, 1995 and 2000. The projected combined log production from the natural forest and plantations in 1990 was 5.34 million cu m, 6.78 million cu m in 1995 and 11.56 million cu m in 2000. The actual production of logs was in fact much lower and instead of increasing it decreased in 1995 then slightly increased in 2000 but still way below the projected production. The reason for the slight increase was the increase in log production from forest plantations, which was more than double the production from the natural forest. However, the production of logs from plantations in 2000, which was 0.57 million cu m, was way below the projected plantation log production of 6.63 million cu m.

Table 2.33 shows the projected and actual plantation area developed by the private sector. There is a tremendous shortfall in the actual area planted and the area projected by the MPFD. The shortfall in the area planted is one of the reasons the actual production of logs and processed major forest products was much lower than the projected production of these products.

2.10.5.1.2 Lumber and plywood production

Table 2.34 shows the projected and actual production of major wood products. Lumber production was expected to increase over the 10-year period from 1990 to 2000 rising from 0.884 million cu m in 1990 to 2.54 million cu m in 2000. However, actual lumber production decreased from 0.841 million cu m in 1990 to 0.286 million cu m in 1995 and 0.150 million cum in 2000. The difference between projected and actual lumber production in 1990 was only 5% but this gap in production increased to 94% in 2000.

For plywood, actual production was much lower than projected in 1990, 1995 and 2000. The gap in plywood production was only 27% in 1990 but this increased to 51% in 2000. Even if the volume of imported lumber and plywood were added to the actual production of these products their individual totals would still be lower than the projected production.

The high projection of production of major wood products was also not supported by the actual log production, which in fact was decreasing from 1990 to 2000. There were no available production data for the other major wood products to make any analyses.
Table 2.32. Projected and actual log production (million cum)

<table>
<thead>
<tr>
<th>Forest Type</th>
<th>1990 Projected</th>
<th>1990 Actual</th>
<th>1995 Projected</th>
<th>1995 Actual</th>
</tr>
</thead>
<tbody>
<tr>
<td>Natural Forest</td>
<td>3.45</td>
<td>2.491</td>
<td>0.382</td>
<td>4.58</td>
</tr>
<tr>
<td>Plantation</td>
<td>1.88</td>
<td>0.05</td>
<td>2.2</td>
<td>-</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>5.34</strong></td>
<td><strong>6.78</strong></td>
<td><strong>0.692</strong></td>
<td><strong>0.692</strong></td>
</tr>
</tbody>
</table>

1 Aggregate production from natural forests and plantations
2 Not specified if from natural forests or plantations
(a) Less than one thousand

Table 2.32. Continued...

<table>
<thead>
<tr>
<th>Forest Type</th>
<th>2000 Projected</th>
<th>2000 Actual</th>
</tr>
</thead>
<tbody>
<tr>
<td>Natural Forest</td>
<td>4.93</td>
<td>0.23 (a) 0.582</td>
</tr>
<tr>
<td>Plantation</td>
<td>6.63</td>
<td>0.57</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>11.56</strong></td>
<td><strong>0.8</strong></td>
</tr>
</tbody>
</table>

Table 2.33. Projected and actual plantation by the private sector (’000 hectares)

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>FLMA</td>
<td>255</td>
<td>85</td>
<td>74</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>IFP</td>
<td>104</td>
<td>140</td>
<td>100</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>TLA/TPSA</td>
<td>131</td>
<td>-</td>
<td>-</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CBFMA</td>
<td>116</td>
<td>250</td>
<td>250</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>AF</td>
<td>39</td>
<td>75</td>
<td>75</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Private lands</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td><strong>645,000</strong></td>
<td><strong>173,502</strong></td>
<td><strong>550,000</strong></td>
<td><strong>70,187</strong></td>
<td><strong>499,000</strong></td>
<td><strong>49,202</strong></td>
</tr>
</tbody>
</table>

1 Total plantation area developed by the private sector, cannot be disaggregated
2 For 2001 only
Source: MPFD and the Philippine Forestry Statistics, 2001
The MPFD assumed high volume of export of lumber, probably as a result of a high assumption of log production particularly from plantations resulting in a large discrepancy between projected and actual lumber production. It was projected that in 1995 the export of lumber would be around 0.375 million cu m and would increase to 1.323 million cu m in 2000 (Table 2.34). In actuality the export of lumber in 1995 was 0.084 million cu m and 0.120 million cu m in 2000.

For plywood, the projected export would remain constant at 0.250 million cu m from 1995 to 2000. In reality the export of plywood was from 0.176 million cu m in 1990 to less than a thousand cu m in 1995 and only about 2,000 cu m in 2000 (Table 2.34).

The apparent domestic consumption (ADC) of logs, lumber, veneer and plywood and the projected domestic demand (PDD) of lumber and plywood are shown in Table 2.36 ADC is the sum of the production and import volumes less the volume exported. The ADC for logs and lumber generally decreased from 1990 to 2001. The ADC of plywood increased up to 1996 then consistently decreased up to 2001. The ADC of veneer increased over this period by as much as 700 times.

In 1990 the PDD for lumber was slightly higher than the ADC but in 1995 and 2000 the PDD was much higher than the ADC. The PDD for plywood was projected to increase from 1990 by as much as 47%. There was no projection on the domestic demand for veneer. The high PDD for lumber and plywood was more likely based on projected improved/improving economy of the country, which would spur construction and therefore higher demand for construction materials. The high projection of production of major wood products was also not supported by the actual log production, which in fact was decreasing from 1990 to 2000 (Table 2.35).

2.10.5.1.3 Veneer production

There was no projected production for veneer. In fact the MPFD projected that the un-integrated veneer mills will have difficulty surviving in the future. To the contrary, the number of veneer mills increased from 15 in 1990 to 19 in 2000 and their ARL increased from 0.315 million cu m to 0.557 million cu m (Table 2.35). Concomitantly production increased from 0.049 million cu m in 1990 to 0.178 million cu m in 2000 (Table 2.35). The consumption of veneer is increasing because the volume of imported veneer increased from less than a thousand cu m in 1990 to 0.229 million cu m in 2000 on top of increased veneer production.
Table 2.34. MPFD-projected demand and export of products vs actual production

<table>
<thead>
<tr>
<th>Items</th>
<th>Plant Capacity</th>
<th>Projected Domestic Demand</th>
<th>Projected Export</th>
<th>Actual Prodn</th>
<th>1%</th>
<th>Plant Capacity</th>
<th>Projected Domestic Demand</th>
<th>Projected Export</th>
<th>Actual Prodn</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lumber (000 cu m)</td>
<td>1,559</td>
<td>884</td>
<td>841</td>
<td>95</td>
<td></td>
<td>1,029</td>
<td>1,217</td>
<td>375</td>
<td>286</td>
<td>20</td>
</tr>
<tr>
<td>Plywood (000 cu m)</td>
<td>1,667</td>
<td>297</td>
<td>397</td>
<td>134</td>
<td></td>
<td>363</td>
<td>436</td>
<td>250</td>
<td>290</td>
<td>40</td>
</tr>
<tr>
<td>Blockboard (000 cu m)</td>
<td>114</td>
<td>-</td>
<td>17</td>
<td>56</td>
<td></td>
<td>99</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
<td></td>
</tr>
<tr>
<td>Particleboards (000 cu)</td>
<td>67</td>
<td>7</td>
<td>NA</td>
<td>25</td>
<td></td>
<td>40</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
<td></td>
</tr>
<tr>
<td>Fiberboard (tons)</td>
<td>177</td>
<td>49</td>
<td>NA</td>
<td>70</td>
<td></td>
<td>92</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
<td></td>
</tr>
</tbody>
</table>

1 Percentage of actual production to total of projected domestic demand and export.

Table 2.34. Continued. . .

<table>
<thead>
<tr>
<th>Items</th>
<th>Plant Capacity</th>
<th>Projected Domestic Demand</th>
<th>Projected Export</th>
<th>Actual Prodn</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lumber (000 cu m)</td>
<td>607</td>
<td>1,217</td>
<td>1,323</td>
<td>150</td>
<td>6</td>
</tr>
<tr>
<td>Plywood (000 cu m)</td>
<td>451</td>
<td>436</td>
<td>250</td>
<td>286</td>
<td>42</td>
</tr>
<tr>
<td>Blockboard (000 cu m)</td>
<td>99</td>
<td>NA</td>
<td>NA</td>
<td>40</td>
<td>40</td>
</tr>
<tr>
<td>Particleboards (000 cu)</td>
<td>43</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
<td></td>
</tr>
<tr>
<td>Fiberboard (tons)</td>
<td>177</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
<td></td>
</tr>
</tbody>
</table>
Table 2.35. Production and export of processed wood products.

<table>
<thead>
<tr>
<th>Year</th>
<th>Lumber(^1)</th>
<th>Veneer(^1)</th>
<th>Plywood(^1)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Prod</td>
<td>Export</td>
<td>Value (^4)</td>
</tr>
<tr>
<td>2001</td>
<td>197</td>
<td>105</td>
<td>15.96</td>
</tr>
<tr>
<td>2000</td>
<td>150</td>
<td>120</td>
<td>20.46</td>
</tr>
<tr>
<td>1999</td>
<td>288</td>
<td>69</td>
<td>8.74</td>
</tr>
<tr>
<td>1998</td>
<td>222</td>
<td>41</td>
<td>5.54</td>
</tr>
<tr>
<td>1997</td>
<td>351</td>
<td>141</td>
<td>21.85</td>
</tr>
<tr>
<td>1996</td>
<td>313</td>
<td>145</td>
<td>23.2</td>
</tr>
<tr>
<td>1995</td>
<td>286</td>
<td>84</td>
<td>14.66</td>
</tr>
<tr>
<td>1994</td>
<td>407</td>
<td>37</td>
<td>6.12</td>
</tr>
<tr>
<td>1993</td>
<td>440</td>
<td>80</td>
<td>17.75</td>
</tr>
<tr>
<td>1992</td>
<td>647</td>
<td>56</td>
<td>14.54</td>
</tr>
<tr>
<td>1991</td>
<td>726</td>
<td>58</td>
<td>16.63</td>
</tr>
<tr>
<td>1990</td>
<td>841</td>
<td>77</td>
<td>19.42</td>
</tr>
<tr>
<td>1985</td>
<td>1,062</td>
<td>512</td>
<td>91.15</td>
</tr>
<tr>
<td>1980</td>
<td>1,529</td>
<td>742</td>
<td>181.81</td>
</tr>
<tr>
<td>1974-75</td>
<td>2,274</td>
<td>458</td>
<td>195.57</td>
</tr>
<tr>
<td>1970-71</td>
<td>860</td>
<td>202</td>
<td>74.25</td>
</tr>
</tbody>
</table>

1 In thousand cu m  2 In thousand MT  NA – Not available  3 Excluding data from ARMM  (a) – Less than thousand cu m  4 – Million US $
Table 2.36.  Apparent domestic consumption of logs and major wood products (million cum).

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Logs</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Production</td>
<td>2.503</td>
<td>0.758</td>
<td>0.771</td>
<td>0.556</td>
<td>0.634</td>
<td>0.73</td>
<td>0.8</td>
<td>0.571</td>
</tr>
<tr>
<td>Export</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Import</td>
<td>0.381</td>
<td>0.694</td>
<td>0.878</td>
<td>0.768</td>
<td>0.435</td>
<td>0.583</td>
<td>0.585</td>
<td>0.551</td>
</tr>
<tr>
<td>ADC</td>
<td>2.884</td>
<td>1.452</td>
<td>1.649</td>
<td>1.32</td>
<td>1.069</td>
<td>1.313</td>
<td>1.385</td>
<td>1.122</td>
</tr>
<tr>
<td>Lumber</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Production</td>
<td>0.841</td>
<td>0.286</td>
<td>0.313</td>
<td>0.351</td>
<td>0.222</td>
<td>0.288</td>
<td>0.15</td>
<td>0.197</td>
</tr>
<tr>
<td>Export</td>
<td>0.077</td>
<td>0.084</td>
<td>0.145</td>
<td>0.141</td>
<td>0.041</td>
<td>0.069</td>
<td>0.12</td>
<td>0.105</td>
</tr>
<tr>
<td>Import</td>
<td>0.004</td>
<td>0.378</td>
<td>0.567</td>
<td>0.412</td>
<td>0.296</td>
<td>0.381</td>
<td>0.359</td>
<td>0.371</td>
</tr>
<tr>
<td>ADC</td>
<td>0.868</td>
<td>0.58</td>
<td>0.735</td>
<td>0.622</td>
<td>0.477</td>
<td>0.6</td>
<td>0.389</td>
<td>0.463</td>
</tr>
<tr>
<td>PDD</td>
<td>0.884</td>
<td>1.029</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>1.217</td>
</tr>
<tr>
<td>Veneer</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Production</td>
<td>0.049</td>
<td>0.019</td>
<td>0.082</td>
<td>0.062</td>
<td>0.059</td>
<td>0.089</td>
<td>0.178</td>
<td>0.256</td>
</tr>
<tr>
<td>Export</td>
<td>0.047</td>
<td>0.032</td>
<td>0.026</td>
<td>0.031</td>
<td>0.032</td>
<td>0.005</td>
<td>0.005</td>
<td>0.003</td>
</tr>
<tr>
<td>Import</td>
<td></td>
<td>0.025</td>
<td>0.094</td>
<td>0.086</td>
<td>0.063</td>
<td>0.138</td>
<td>0.119</td>
<td>0.105</td>
</tr>
<tr>
<td>ADC</td>
<td>0.002</td>
<td>0.012</td>
<td>0.15</td>
<td>0.117</td>
<td>0.08</td>
<td>0.222</td>
<td>0.294</td>
<td>0.358</td>
</tr>
<tr>
<td>Plywood</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Production</td>
<td>0.397</td>
<td>0.29</td>
<td>0.508</td>
<td>0.484</td>
<td>0.426</td>
<td>0.243</td>
<td>0.286</td>
<td>0.292</td>
</tr>
<tr>
<td>Export</td>
<td>0.176</td>
<td>(a)</td>
<td>(a)</td>
<td>(a)</td>
<td>(a)</td>
<td>(a)</td>
<td>(a)</td>
<td>0.002</td>
</tr>
<tr>
<td>Import</td>
<td>0.003</td>
<td>0.002</td>
<td>0.001</td>
<td>0.001</td>
<td>0.002</td>
<td>0.001</td>
<td>0.001</td>
<td>(a)</td>
</tr>
<tr>
<td>ADC</td>
<td>0.224</td>
<td>0.292</td>
<td>0.509</td>
<td>0.485</td>
<td>0.248</td>
<td>0.244</td>
<td>0.285</td>
<td>0.292</td>
</tr>
<tr>
<td>PDD</td>
<td>0.297</td>
<td>0.363</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>0.436</td>
</tr>
</tbody>
</table>

PDD = Projected domestic demand  
ADC = Apparent domestic demand  
Source: Philippine Forestry Statistics, 2001
2.10.6 Status of Wood-based Industries Programs and Projects

The DENR has implemented programs/projects as part of the strategies to attain the various objectives of MPFD Programs. This section reviews and assesses the programs/projects vis-à-vis the program strategies, determine the impacts of programs, identify issues affecting failure or success of programs and make necessary recommendations where appropriate.

2.10.6.1 Provision of Long Term Tenure of Industrial Permits

This strategy promotes favorable climate and business environment for the wood industry. The transition from TLA to any of the 3 methods of natural resources access allowed by the Constitution necessitates new instruments for resource access. The Department of Environment and Natural Resources (DENR) formulated the Industrial Forest Management Agreement (IFMA) as promulgated under DAO No. 99-53. It is a production sharing agreement where the natural resources located in the IFMA area are the share of government in the enterprise while the IFMA holder provides the resources for extraction and processing as its share.

IFMA provides for a maximum area of 40,000 hectares and has duration of 25 years renewable for another 25 years. The profit sharing between the holder and the government is negotiated and becomes part of the IFMA. Holders of TLAs were encouraged to convert operations to the IFMA. Of the 193 IFMAs at the end of 2002, only 5 were converted from TLAs. The total area occupied by IFMAs is about 683,213 hectares.

2.10.6.1.1 Issues and Concerns

While the policy is to convert TLAs to IFMA, the guidelines for conversion are not very clear. This is one reason only 5 TLAs have converted. Unless there are clear violations of forestry rules and regulations, there should be automatic conversion. Unless the expiring TLAs are speedily converted into IFMAs their areas become open access with high potential of incursion by upland population. Furthermore, the provisions of DAO 99-53 are often changed new administration resulting to confusion. DAO 2003-21 was issued amending certain provisions of DAO 99-53. The conditions under which conversion of TLAs to IFMAs is allowed are spelled out in the DAO.

The timber corridor has been generally identified. However, the exact location of production forests has yet to be identified. Some of the areas in the corridor have been claimed by as ancestral domain. Unless the production areas in the timber corridor are clearly defined investors will be hesitant in investing in plantation development. It is understood, however, that DENR is in the process of identifying these areas in some provinces in Mindanao.

Tenure is only one of many measures of security of players in the industry. The approval of the integrated operations plans (IAOP) on an annual basis hampers the operation of the industrial firms. Without an approved IAOP, a firm is not supposed to operate thereby incurring losses. If it operates it is in clear violation of government rules and regulations. It is a case of damned if they don't and damned if they do. It is recommended that the integrated operations plan is approved on a multi-year basis.

DENR requires an investor to secure a permit to establish a processing plant. Once the processing plant is established the investor is once again required to obtain a permit to operate. This policy onerous and what is needed is one permit that would roll into one the permits to establish and to operate processing mills. Furthermore, the permit to operate processing mills should also be on a multi-year basis.

2.10.6.1.2 Financial Assistance in Investments and Retooling

The production and processing equipment and infrastructure of the wood-based industries are old and some already obsolete. Furthermore, the sawmills and the veneer mills were designed to process large diameter logs. With the ban in logging in the old growth or virgin forests logs coming from the natural second
growth forests are much smaller in diameter. Although sawmills and veneer mills could still be used to process these logs they are no longer cost-inefficient.

There has been a move in the industry to retool. In fact some of the veneer and plywood mills have acquired modern lathes that can process logs to veneer with smaller core logs. However, the industry had been largely unable to retool because of lack of affordable capital. Furthermore, at the time of transition from virgin to second growth forest, the people in the industry became hesitant to invest. Thus the pieces of equipment currently used by the industry for processing are old and inappropriate for the sizes of logs being processed.

There is a need to rationalize the industry. As of 2001 the total ALR of sawmills, veneer and plywood mills amounted to 3.567 million cu m. The total production of logs in 2001 was reported to be 0.571 million cu m. Of this, 0.319 million cu m were sawlogs and veneer logs while 0.241 million cu m were pulpwood. Log production was way below the ALR of the processing mills. This means that their capacities are not properly utilized and thus inefficient.

Among the issues and concerns about retooling is that wood based industry cannot expect to become competitive not only here in the local market but also abroad if it continues to use old and antiquated equipment that weighs down heavily on its efficiency. Government and the industry itself must find ways to access affordable capital for investments and for retooling. Furthermore, retooling should be given tax and other incentives as well as long-term financing. In the mean time the Philippine Wood Producers Association has petitioned DENR to issue a moratorium on the processing of applications for the establishment of new processing mills. DENR has issued Memorandum Circular (MC) No. 2003-14 declaring such a moratorium until rationalization of the industry has been made.

2.10.6.1.3 Improvement of Infrastructures

Infrastructures are herein defined to include electricity, transport system, and communication system. The presence of necessary infrastructures defines the ease and with which an enterprise, including the wood-based industry, operates in the country and the cost of operation. In 1992 to 1993 the country suffered 12-hour brown-outs which devastated the production system. This prompted the government to take extra ordinary measures to install power-generating systems from independent power generators. The power brownouts were solved however, the cost of electricity increased tremendously because in the contracts of the power produces and government, even unused power generated is paid for. This appears in the bills as power purchase adjustment (PPA). The PPA charge is often higher than the cost of electricity used by a consumer.

The crucial transport system in the wood based industry particularly in the domestic movement of raw materials and processed goods is shipping. The cost of shipping a 10 and 20 ft container in late 1990s was about P14,000 and P22,000, respectively, from Mindanao to Manila. This has almost doubled to about P23,000 and P42,000 (Sulpicio Lines, 2003, Tesoro’s pers.comm.), respectively in 2003. This often makes products manufactured in the Philippines less competitive than imported products.

The communication system has greatly improved. In 1990 there was only one telephone system operating in the country with a reported 657,818 telephone lines (PSY, 1990). As of December 2000 there were 6.91 million telephone lines (PSY, 2001). At the same time, personal telecommunication technology (cell phone system) was fast developing making communication easier and less costly. In 1998 there were only 359 registered cellular mobile phones compared to 6.45 million registered in 2000 (PSY, 2001). It is claimed that today there are 15 million cell phones in use in the country. It has come to a point that it is possible to communicate from almost any place in the country.

In a sense the infrastructures needed to do business in the wood industry are present except in the case of shipping where the cost of shipment is still relatively high.
Issues and concerns - Shipping costs remain high in the country. Since the production sector of the wood-based industry is located mainly in Mindanao, the cost of transporting raw materials and products to and from Mindanao affect the final cost of the products. This has to be studied seriously by government.

2.10.6.1.4. Provision of Incentives

The veneer and plywood sectors of the wood-based industry have been de-listed by the Board of Investments (BOI) from the Investment Priorities Plan (IPP) (Angeles, L., 2003, Tesoro’s pers com). Thus the veneer and plywood sectors can no longer enjoy tax incentives on importation of machineries. This has made it more difficult for these sectors to retool.

One measure to promote efficiency in the lumber industry is to allow the export of lumber. The ban on the export of lumber should be lifted and allow the export of lumber manufactured from imported logs. This is also to recover foreign exchange used in the importation of logs, generate employment and stabilize the lumber industry sector (Angeles, L., 2003, Tesoro’s pers com).

Government must encourage the private sector, especially small landholders, to plant trees. It can provide incentives such as the non-payment of real estate taxes for 5 years. DENR is already working this out with the DILG and the LGUs (Gozun, E., 2003).

One of the impacts of world trade globalization is the reduction of tariff. The wood-based industries have not been spared from the effects of reduced tariff. Furniture, plywood, veneer, lumber, and other wood-based products face stiff competition from imported products. Government should slow down the reduction of tariff to allow the wood-based industries to become more efficient and productive and thus more competitive against imported products (Angeles, L., 2003, Tesoro’s pers com).

Issues and Concerns - DENR should initiate discussions with relevant government agencies, particularly the BOI, to re-enlist veneer and plywood mills as industries that can enjoy benefits indicated in the Omnibus Incentives Act. This will allow the industry to retool and become more efficient and produce higher quality products.

DENR can also provide incentives to the lumber industry sector by allowing lumber producers to export lumber produced from imported logs.

Private landowners who plant trees should be provided some incentive such as the non-payment of real estate taxes for 5 years as enunciated by Secretary Guzon during her address to the PWPA on the occasion of the 52nd anniversary of the association on August 22, 2003.

Reduced tariff on imported wood products such as veneer, plywood, lumber, and furniture make local products less competitive. Lower tariff should have the effect of making local industries more efficient and thus become competitive. However, lack of resources for retooling prevents local industries to become more efficient.

2.10.6.1.5 Provide New Technologies

The shift in the production areas from the virgin forests to the second growth forest resulted in the harvest of smaller diameter logs, the increased use of lesser-known/useless species and the increased use of plantation grown species in applications where the common commercial species were utilized. This means that government should provide industry the processing technologies for these species.

In 1991-1994 the International Tropical Trade Organization (ITTO) provided grant funds to the Forest Products Research and Development Institute (FPRDI) to conduct research on the utilization of small-diameter logs including tree-tops and branches. The study generated technologies on the processing from sawmilling, drying, and machining as well as identified suitable uses of these species. However, the results of this study have not been fully utilized by the wood-processing sector. The Paper Industries
Corporation of the Philippines (PICOP) adopted the saw-dry-rip technology for sawing tree-tops and branches. From the ITTO study two technology publications in CD form have been published by FPRDI, namely Field Guide to the Identification of Important Lesser Used Species of Philippine Timbers, and Manual on the Properties and Uses of Lesser Used Species of Philippine Timbers.

One drawback in the utilization of tree tops and branches is economic in nature. The cost of collecting and transporting these raw materials is higher compared to large diameter logs since the cost of collection and transport of these two types of materials is more or less the same.

In 1990 the Philippines had an estimated volume of 0.413 million cu m of lesser-used species (LUS) with 70 cm diameter and larger, 0.771 million cu m of diameter 60 cm and larger and about 1.183 million cu m of diameter 50 cm and larger (Bello, E. & A. Moistero, 1997). About 9.8% of the total volume of trees harvested in the natural forest is LUS. To promote the utilization of LUS the ITTO also funded in 1993 a 5-year project at the FPRDI on the “Utilization of Lesser-Used Species as Alternative Raw Materials for Forest-Based Industries”.

The physical, strength and processing properties, such as sawmilling, drying, machining, finishing, natural durability and treatability with preservatives, of these species of 39 species were studied. Likewise, the end uses such as posts, sills, beams, joists, rafters, flooring, etc. were studied. Publications on the properties and uses of these LUS were prepared and disseminated. The use of LUS in the manufacture of parquet flooring, mill works, pallets, treatment of materials for poles and wood bending were piloted for more than two years with the private sector. It is not known whether any of the cooperators continue to use these species for the production of their products.

Despite extensive technology transfer and promotional activities only two electric cooperatives, one in Isabela and the other in Ilocos Norte adopted the use of LUS for poles treated with preservatives through the High Pressure Sap Displacement Method (HPSD) (Pabuayon, C. 2003, Tesoro’s pers com). One furniture manufacturer in Pampanga adopted the wood bending technology but had to stop because of lack of raw materials. One of the barriers in the adoption of technologies in the utilization of LUS lies in the size of most of these species. The harvest of trees from the natural forest allow only the cutting of trees not less 60 cm in diameter, except along rights-of-way, log landing, and skid trails. Furthermore, the processing of LUS requires significant capital investment for retooling (Smith P., 2000), which is not readily available to wood processors.

Because the cost of collection and transport of LUS is higher than the commercial species their utilization should be in the manufacture of higher value added products such as mill works and furniture. However, since the supply of individual species is rather limited the utilization of these species should be one that allows grouping or clustering. Their use as construction materials allow grouping of species. Furthermore, the perception that they are inferior to commercial species has to be overcome before they become acceptable to lumber users. The use of machine stress-graded lumber where the lumber is graded according to its inherent strength properties and not because it belongs to the popularly used species, could overcome the negative perception of LUS.

Machine stress grading of lumber is another ITTO project at the FPRDI. The technology has been piloted in two sawmills, one in Aurora and the other in Quezon City. Three lumber producers are now willing to adopt the technology and are just waiting for the standards for machine stress-graded lumber which is now being formulated by the Bureau of Product Standards before they acquire the machine. Two of the firms are in Cebu and the other in Mandaue City.

The government has been generating technologies for the wood-based industries. There are however, some barriers in the adoption of these technologies by the private sector. A mechanism is needed to liaison between the technology generators and the industry for the faster transfer and adoption of the technologies.
Issues and Concerns - The harvest of LUS is guided by rules and regulations that apply to the common commercial species particularly in diameter limit requirements. LUS by nature have small diameters and if the minimum cutting diameter of 60 cm is applied only a small volume of LUS can be harvested thus limiting its prospects for wider utilization and the prospects of augmenting very limited wood resources. It is suggested that government reviews this policy.

There are technologies on the utilization of LUS. However, these are not being adopted by the processing sector. Government must also review and strategize how the technologies can be effectively transferred to industry.

Government research organization should also consider breeding studies to improve the growth rate of LUS and similar species.

2.10.6.1.6 Establish Community-based Industries

Community-based Forest Management (CBFM) was established as the national strategy to ensure sustainable development of the nation's forests through EO No. 263 issued in July 1995. It is a strategy that recognizes the role of upland population in the conservation of the forest resources since they are the most immediate stakeholders of these resources. The Strategic Action Plan (SAP) 1997-2020 of DENR spells out the strategy for the implementation of the CBFM program. It contains a 7-point strategy and the activities to achieve expected outputs. The strategies are:

- Improve the policy environment for CBFM
- Institutional restructuring of the DENR Forest Services
- Issuance of a Joint DENR-DILG policy on devolution of forest management functions
- Capacity building for POs
- Developing a cadre of village foresters
- Redesign IEC strategy for wider coverage, and
- Provide adequate support system for CBFM

It can be argued that all the above strategies need to be implemented in order that the CBFM as a strategy would succeed. However, among the above strategies, 4 must be satisfied in order that viable community-based industries can be achieved, namely:

- Improve policy environment for CBFM
- Institutional restructuring of the Forest Service
- Capacity building for POs, and
- Provide adequate support system for CBFM.

2.10.6.1.7 Institutional Restructuring

In the matter of institutional restructuring of the Forest Service, the activities identified in the SAP are the creation of an appropriate forestry organizational structure for CBFM, and the reorientation of personnel who will be working with CBFM. DENR has created a functional unit at the FMB, the CBFM Division, whose mandate is to assists in the formulation of CBFM policies and to monitor the accomplishments of the CBFM program. Very recently, a CBFM Office has been created under the Undersecretary for Field Operations. Its basic function is to coordinate the effective implementation of the CBFM strategy and participate in the formulation of policies and plans relating to CBFM.

At the field level particularly at the CENRO a CBFM Unit has been formed. Its functions are to oversee the establishment of CBFM projects, assist the formation of the people’s organization (PO), assist in the community organizing, assist the POs in area development, assist in the establishment of livelihood projects, and monitor and evaluate the CBFM projects.
Institutional restructuring does not only mean the establishment of organizational units but also mean providing the units with the means to implement activities to achieve program/project objectives. This means providing adequate number of properly trained personnel and the logistical support in terms of budget and mobility. In a survey of 7 CENROs in Region 2 in 2001, the results showed that personnel assigned to the CBFM Unit ranges from 2 to 11 with an average of 5. They manage an average of 5 CBFM projects covering an average area of about 5,000 ha. There are an average of 2 CBFM projects without a Project Management Officer (PMO). This means that the CBFM projects are not given the needed technical assistance from the DENR. Furthermore, most if not all of the personnel have forestry background and have no training in other fields required to provide a well-rounded assistance to the CBFM projects.

By way of budget, the average travel allowance of each personnel in the CBFM Units surveyed was P3,425. At an average of P100 per diem per field visit (regularly it would be P300/day), the travel allowance would support only 34 days of travel per year. With respect to supplies and materials, each personnel has an allocation of P2,311 for 2001. Furthermore, 5 of the 7 units surveyed did not have any vehicle at their disposal for field visits, the other 2 had a motor cycle each.

With the personnel complement of the 7 CBFM Units and the logistical support provided them it is hard to imagine that they can provide the assistance that the CBFM projects need for community organizing and area development. Depending upon the resources available in the communities and the type of livelihood projects or enterprises that can be established in the projects, the expertise of the personnel of the CBFM Units should be a composite for an extension team that include specialization in agriculture and animal science, forestry and agro-forestry, entrepreneurship, and cooperative development.

2.10.6.1.8 Capacity building

Capacity building empowering the communities to solve problems affecting them. It includes training on enterprise development including marketing of products. Training alone cannot guarantee successful enterprise development considering that the people comprising the upland communities have little opportunities for entrepreneurial activities and their way of life has been limited to just production of products to satisfy their daily needs. There is need to lead them by the hand, assist them in the identification of potential enterprises, access technologies from relevant organizations, access capital, and link them to markets. The POs should be trained on how to access resources through linking and networking. The structure and personnel of the CBFM Units should be geared to providing the assistance needed by the POs.

2.10.6.1.9 Adequate support system for CBFM

The Strategic Action Plan (SAP) for CBFM identified 4 activities under this strategy. Only the conduct of inventory of resources within the CBFM sites satisfies the requirement for community-based industry development. The support systems that the community needs to establish viable enterprises are already identified under Capacity Building.

2.10.6.1.10 Enterprise Development as an Approach to Community Development

“People first and sustainable forestry will follow” is the slogan of CBFMP. It is very apt and correct as the strategy for a successful implementation of the Program. The people in the uplands are there because they have no other place to go for a living. The first and foremost approach therefore of CBFMP is to provide the community with a viable and equitable source of livelihood compatible with forest conservation. Enterprise development should be the cutting edge strategy of CBFMP. Site development such plantation development will come when the source of livelihood of the community has been established.

There are myriads of opportunities for enterprise development in CBFM areas and it is not limited to forest based raw materials but can also be agriculture based. One community that has developed an
enterprise is the Sierra Madre Multi-purpose Cooperative in Batong Labang, Ilagan, Isabela. This community is producing essential oils from citronella and lemon grass and selling it to a soap manufacturer (also in Ilagan) producing herbal soap. One liter of the oil cost P1000. One liter of ilang-ilang oil cost P10,000. The community is producing 10-15 liters of lemon grass and 8-10 liters of citronella oil a month. The community has also developed a 20 ha ilang-ilang plantation that is not three years old.

Another enterprising community is the Federation of Vista Hills, Kalongkong and Kakilingan Upland Farmers, Inc. in Bayombong, Nueva Vizcaya is engaged in the production of handicrafts and has joined local and national trade fairs to promote their products. Such types of enterprises can be promoted in communities to widen their opportunities for income generation and reduce the pressure on the forest.

One limitation of upland communities in establishing enterprises is lack of capital, lack of expertise and lack of marketing skills. DENR can link these communities with existing government programs, financial institutions or with the private sector such as the Philippine Chamber of Commerce and Industry (PCCI) for assistance. The reason the enterprise of the Sierra Madre Multi-purpose Cooperative is that the members were provided with the appropriate technology, training in the use of the technology, and they were linked with a sure market capable of absorbing all of their produce.

2.10.6.1.11 Resource Use Permit

One attempt of government to support livelihood and enterprise development in the communities is the granting of resource use permits (RUP). The RUP allow the community to collect wind-blown and dead trees from the natural forest for processing and sale. However, POs have abused this privilege and as a result the processing of RUP applications and RUP permits have been suspended, first in 1998 and of late in 2002. The suspension has been applied to all CBFM communities including those without any violation thus in effect punishing them for the transgressions of other communities.

The corner stone program for sustainable forest development is the CBFMP. Concomitant to the restructuring of the organization that established functional units at the FMB and the CENRO, there should be provision of adequate personnel of appropriate expertise and adequate financial support to these units.

One of the priority issues that DENR should focus on is the establishment of livelihood projects and enterprises in the communities even before actual area development takes place. This is because the main concern of the population is livelihood. To them forest conservation and development are even anathema to their search for daily sustenance. Successful livelihood and enterprise development means they will not need to use the forest as a source of daily sustenance. DENR needs to link with other agencies, LGUs, the private sector and NGOs to access resources in support of upland communities establish enterprises.

The universal suspension of RUPs in all communities for the violation of a few has adversely affected the livelihood of law-abiding communities and the credibility of DENR. The policy of universal suspension should be reviewed in favor of suspending only those suspected of abusing their resource use permits. Those who are suspected of violation of their CBFMA should be investigated and if found guilty their CBFMA should be cancelled.

2.10.6.1.12 Develop Product Standards

International markets more and more require that products offered meet certain quality standards. For forest products, there are 14 standards that include that of plywood, sawn timber, and rattan. Very recently, the standard on children’s high chair and that of kitchen equipment (cabinets and work tops) have been adopted. The specifications for school and residential furniture have been recently completed while the standards for foldaway beds are being deliberated upon.

Product standard preparation is the mandate of the Bureau of Product Standards (BPS) of the Department of Trade and Industry (DTI). Since BPS does not have the technical expertise on wood products it relies on the assistance of technical government agencies, the private sector and the academe. The
standards for stress-graded lumber is being prepared with the assistance of the Philippine Wood Producers Association, the Forest Products Research and Development Institute (FPRDI) of the Department of Science and Technology (DOST), and the UPLB College of Forestry and Natural Resources.

The growing world-wide emphasis on product standards as well as standards at the work place put pressure on the local manufacturers to produce products that meet these standards. It is important that local products can compete in the world market otherwise our exports of forest-based manufactured goods would further decrease.

Furniture made of wood, non-timber materials and from mixed media are the Philippines’ fastest growing forest-based products in the international market. While the standards of furniture products are being developed towards International Standards Organization’s standards, the standards of other countries are being used locally. While it is necessary to have product standards that are at par with foreign standards it is equally important the there is an accredited testing institution to determine whether the products, especially for export, satisfy the standards. For forest products, the accredited testing laboratory is the FPRDI. It has the necessary testing facilities and competent technical personnel to perform the test for plywood and for furniture. It is currently working for its ISO accreditation for its furniture-testing laboratory, which it hopes to obtain before the end of the year.

There are product standards that are not mandatory. Therefore, manufacturers will subject their products to testing, to determine if they conform to standards, on their own volition. However, products that are exported and do not pass international standards reflect on the entire country and not only to a particular manufacturer. It is suggested that wood product standards be mandatory especially for export purposes. Since DTI does not have the needed personnel to monitor the compliance of manufacturers to the standards, the PWPA and other industry associations could be deputized to act in its behalf for monitoring purposes.

2.10.6.1.13 Establishment of a Forest Industries Board

The MPFD proposed the establishment of a Timber Industry Board (TIB) to oversee the development of the wood-based industries. The suggested functions of the Board are:

- Coordinate and promote overall development of the wood industries,
- Arrange financing opportunities and government incentives for investments,
- Provide technical advisory services to existing timber industries,
- Coordinate industrial use of raw materials and encourage utilization of timber with emphasis on product diversification and promote improvement and economy in the methods of processing,
- Coordinate and promote training for wood industries,
- Prescribe standards and methods for use of wood products,
- Provide information on wood products, such as prices, to the industry and government,
- Act as coordinator between government and industry on all development issues, and
- Recommend in coordination with concerned institutions on minimum standards for industrial safety and hygiene.

It appears, however, that government, the DENR in particular is not supporting the establishment of the TIB. This is manifested in the absence of any provision in the bill on “Sustainable Management of Forest Resources” submitted to Congress for enactment. The PWPA sees the need for a TIB that could represent the industry with government particularly in the promulgation of policies supportive to the industry. Some countries in Southeast Asia have industry boards such as the Timber Industry Board of Malaysia. Should there be a board established it should not limit its mandate to the development of the wood industry alone but it should be representing the interests of all forest-based industries including the non-timber forest products and the herbal and medicinal industries as well.
In March 2003 the DENR held consultative discussions with the forest-based industry sectors, e.g. PWPA, the Chamber of Furniture Industries of the Philippines (CFIP), the Philippine Chamber of Handicraft Industries (PCHI) and the Chamber of Herbal Industries of the Philippines, Inc. (CHIPI), to address the various developmental concerns of these sectors. This culminated in a consultative workshop held on June 11-12, 2003. In the forefront of these discussions was the Forest Based Industry Advisory Committee (FBIAC), which was formed at the Forest Management Bureau. It was this Committee, which coordinated, liaised, documented, facilitated and organized the discussions. It also became the focal point in DENR for the monitoring and evaluation of the government’s response to the issues and concerns of the industry sectors particularly in the formulation and issuances of policies needed to improve the business environment of the forest-based industries.

The need to establish a FBIAC only emphasizes the need for a body, such as the Timber Industry Board, that can address the needs of the forest-based industries with respect to linking industry to government and the private sector.

The forest-based industries need an organization that can assist them with their needs from government. It should be independent of DENR and the DTI so that it can be free to pursue its mandate of assisting the forest-based industries without undue pressure from the agency that supervises it. It should however have close link with the DENR and the DTI and other relevant government agencies.

2.10.7 Non-wood Forest Based Industries

The Philippines is rich in non-wood forest products. In fact these products form the basis of a number of competitive industries such as the rattan and bamboo furniture industries providing employment to a large sector of the labor force. Upland farmers obtain steady income from gathering of these forest products.

As indicated above, the MPFD formulated strategies to assure continued and sustainable supply of these raw materials, improve their harvesting and utilization and the establishment and development of micro/cottage industries. Hereunder is a review of the government’s program on these strategies for the more important non-wood forest products.

2.10.7.1 Sustainable Management of Existing Resources

2.10.7.1.1 Rattan Resources

The management of rattan resources in the country is governed by DAO No. 4 promulgated in January 2, 1989, prior to the formulation of the MPFD. This has remained the policy on rattan resources. The AO prescribes where rattan can be harvested, who may qualify to obtain rattan-cutting permits, the procedures for award of the permit, the maximum area that can be granted to certain types of permittees, the privileges and obligations of the permittees, rattan processing and utilization and the establishment and development of rattan plantations. DAO 21 (Series of 1988) bans the export of rattan in its raw or semi-finished form and encourages the importation of rattan canes.

Surprisingly the reported production of rattan poles has remained high. In fact it is at the level of those in the 80’s and higher than those reported in the 70’s, except for 2001 where the level of reported production was about a quarter of the 2000 production. Caraga Region has consistently been the major source of rattan in the country of late (PFS, various years).

One of the major components of the DAO No. 4 is the establishment and development of rattan plantations. To ensure the supply of the raw materials, rattan cutting-permittees are required to plant rattan seedlings for every lineal meter of rattan pole cut. Before a permittee can operate he must submit for government’s approval an annual cutting and replanting plan.
To pursue further the development of rattan plantations, the government identified areas available for plantation development. The requirements, procedures for accessing these lands, and those who may qualify to access them are presented in DAO No. 4.

There are no available data on rattan plantation development. IFMA holders are allowed to develop rattan plantations but there are no reported plantations developed by IFMAs (FMB Officials, Tesoro’s pers com).

Rattan Deposit – To assure funding for the development of rattan plantations, DAO No. 4 requires the collection of fifty centavos (P0.50) for every linear meter of rattan harvested for poles two centimeters and bigger in diameter, and twenty-five centavos (P0.25) for rattan smaller than two centimeters in diameter. The special deposit is considered a trust fund and is supposed to cover the replanting obligations of the permittees. It is not readily known how much has been collected and deposited with the national treasury.

Rattan Plantation Development Out of the Rattan Deposit - There is scanty information on rattan plantation establishment and development. Likewise, there is not much information on the area planted out of the rattan deposit. The rattan deposit deposited with the national treasury is in the form of a trust fund. To utilize the trust fund, one has to submit a request from the Department of Budget and Management (DBM). Accordingly, it is not easy to obtain releases from the trust fund. There must be another option to utilize the rattan deposit for plantation development. There are no available data on the extent of rattan plantation that have been established using the rattan deposit.

The consistently high supply of rattan suggests that there are still harvestable materials from Philippines forests. This is contrary to the general perception that the country’s rattan supply is fast depleting. This perception has been expressed by one of the industry players. Mr. Padiernos, former President of the Chamber of Furniture Industries of the Philippines (CFIP) and owner of the Pacific Arts and Décor, Inc. (PADI) started in the furniture business by making rattan furniture in the late 80’s (Padiernos, E, Tesoro’s pers com). He has gradually shifted to wood and other raw materials such as bamboo because of the dwindling supply of rattan. The issues are: where are these poles coming from in Caraga Region and Region XI (from plantations or natural forests) and is the supply sustainable. A closer monitoring of the sources of rattan in the regions should be undertaken to document where the supply is coming from.

The inability to access the rattan deposit has hindered the establishment and development of rattan plantations. Options should be identified to be able to utilize the funds for the purpose it was intended. One option is not to collect the rattan deposit but require the permittee to contract out the establishment of plantations. Government then only requires from permittees proof of areas planted as satisfaction of the replanting requirement instead of the deposit.

2.10.7.1.2 Bamboo Resources

It is estimated that there are about 52,000 ha of bamboo in the country comprising of 5 major species namely: kawayan tinik (Bambusa blumeana), kawayan killing (B. vulgaris), bayog (Bambusa sp.), giant bamboo (Gigantochloa aspera), and bolo (G. levis). Accordingly, the bamboo resources of the country are dwindling because of the absence of systematic management of the resources, lack of concerted effort to develop the resource and lack of effective utilization of bamboo. There is no trend in the quantity of materials produced. However, the reported harvest in 2000, which was 2.34 million pieces seem to be exceedingly high compared to the previous years. There has been very little effort of government in promoting the establishment of bamboo plantation except that it is identified as one of the species that can be propagated in CBFM areas.

The United Nations Development Program (UNDP) supported a bamboo research and development projects at DENR 1987 to 1993 (Virtucio, F., 1996). The project included the establishment of 6 pilot plantations in selected sites in various parts of the country using the 8 most important species in the
country. The plantations were established to determine the performance of the 8 species and to generate needed management prescription for the species. There are also individual efforts in the establishment of plantations most notable is the one in Tanay area in Rizal Province. One of the drawbacks in bamboo plantation development is the high cost of planting materials. It is reputedly about P100 per seedling.

Accordingly, there are no guidelines in the collection and harvest of bamboo in public forestlands. A set of guidelines similar to DAO No. 4 (Series of 1989) covering rattan collection and utilization should be developed for bamboo. Bamboo furniture has the fastest growth rate (15%) among the furniture group and deserves support from government in terms of ensuring sustainable raw material supply and in providing incentives for its continued growth and development.

There is also no viable bamboo shoot industry in the Philippines despite the fact that Filipinos enjoy eating this fine delicacy. Canned bamboo shoots are mostly imported. In Thailand there is thriving bamboo shoot canning industry. Bamboo shoot production could be a viable industry in CBFM areas. It also promotes the conservation of the environment while satisfying the need of the people for livelihood and enterprise development.

2.10.8 Utilization of Non-commercial and Lesser-Used Non-Timber Species

There are about 62 bamboo species and 64 rattan species in the Philippines. In both instances only a few of these species have found commercial and industrial uses. In the case of rattan not more than 7 are commercially used and this is dominated by three species. In the case of bamboo three major species are used commercially for construction and for furniture and handicraft manufacture. There are other 5 bamboo species that have found commercial use lately. The use of the non-commercial species would significantly increase supply of the raw materials.

The utilization of lesser-used wood species has been adequately dealt with in Section 2.10.12 (Provision of New Technologies). With respect to lesser-used bamboo and rattan species, the FPRDI has been conducting research on the utilization of these species. Several climbing bamboos have been studied with respect to bending properties for use as handles of ladies’ bags.

There is not sufficient research conducted on the properties and uses of lesser-used non-timber species. More emphasis should be given to these forest products because they can be the basis of livelihood and enterprise development activities in CBFM and other upland populations without putting the forest at risk of destruction and degradation. There is also no known inventory of these species. They should be included in future forest inventories so that their economic importance can be more properly assessed and where industries based on these resources can be properly located.

- Plantation Development

Rattan Plantation Development – The Philippines has some experiences in the development of rattan plantations, albeit in small areas. In Ifugao rattans are grown in home garden mainly their fruits, which are used as cure of cough (Fernando, E. & W. Palayapyon, 1988). The National Development Corporation (NDC) and the Paper Industries Corporation of the Philippines (PICOP) jointly developed in 1983 about 4,000 ha of rattan plantation under bagras (Eucalyptus deglupta) and falcate (Paraserianthes falcataria) plantations (Formoso, G. 1988). There are no records of the volume harvested.

Rattan plantations have also been developed under government projects. Table 16 shows the reported rattan plantations established under the Forestry Sector Project of DENR. There was a reported total area of 11,959 hectares (Tesoro, F., 2000). Some of these areas were developed prior to the formulation of the MPFD.
Bamboo Plantation Development – There are established bamboo plantations, albeit small and scattered and undocumented. These are apart from the pilot plantations developed under the UNDP project discussed earlier. Bamboo plantations are often reported as part of the total plantation development by various projects.

There is no plantation development as such for rattan and bamboo and other non-timber forest products. The growing importance of these resources as raw materials for community-based enterprises should alert government in giving more emphasis in the development of plantations of these species.

2.10.9 Improved Access to Resources by Local Communities

Local communities have been provided access to forest resources by a number of policy issuances by DENR. Foremost among these is the CBFMA. It allows organized communities to manage and utilize large tracts of forestlands for their own ends. In addition, the Resource Use Permit (RUP) allows the community to harvest, process and utilize or sell forest products including timber.

While it is true that communities can harvest, process and utilize/sell timber and other forest products, most communities do not have inherent resources to properly process and add value to the raw materials. Improved access does not only mean physically gathering the resource but the capacity to fully benefit from the resource. Inability of the community to fully utilize and benefit from the resources they are permitted to gather and utilize often lead them to form alliances with people outside of the community who have the capital to process and market the resources often to the disadvantage of the greater number of community members. It has not been enough for DENR to permit the community to gather, process and utilize/sell the forest resources but it must provide the resources to the community to fully benefit from the resource, or link them with organizations that can provide them adequate assistance to fully benefit from the resources they were given access to.

Another example of providing access to resources is embodied in DAO No. 4. Section 8 stipulates that at least 10% of the region’s total rattan production areas shall be reserved for local consumption/use where users of the product exist in the region. Furthermore, the same DAO qualifies individual rattan gatherers or cooperatives of rattan gatherers organized under the laws of the Philippines to bid for the operation of rattan production areas. The intent of the DAO is laudable as it gives opportunities to the lowly rattan gatherers to benefit tremendously from the forest resources and become entrepreneurs. By themselves, however, the rattan gatherers cannot mount any serious bid for the production areas. There is the possibility that unscrupulous persons would organize them and use them as dummies to bid for the production areas. DENR must be vigilant and must not allow this to happen.

DENR formulated and implemented the Socialized Industrial Forest Management Program (SIFMP per DAO 24, 1996) to provide more equitable access to forest resources by individuals or families preferably residents of the municipality where the area is located. In fact actual occupants of the areas are given priority. Where the areas that may be awarded to individuals and families are small (1-10 ha) it is still an opportunity for them to improve their economic status. However, government does not provide direct assistance to the SIFMA holder particularly individuals and families who do not have the resources to develop their area. The provision of free seedlings would go a long way in helping individuals and families develop their areas.

DAO 98-42 allows the management and utilization of government owned forest plantations in forest production areas by POs. The plantations that are the subject of this regulation are the reforestation/forest plantation projects administered/established by DENR, plantation areas established by TLA holders and other permittees in compliance to license agreements or permits, and plantations owned by cancelled IFMA, SIFMA, ITP and others whose license agreement has been cancelled for a cause. The intention is highly commendable. However, it is difficult to say whether in fact the harvest can really take place given the opposition of environmentalists particularly NGOs against any cutting in the forest even forest plantations especially those owned by government. Environmentalist groups have objected to the cutting of cull trees in seed production areas, and this is for few and selected deformed trees, how much more for large areas of
plantations. There is need for DENR to undertake information and communication campaign to inform the public that some plantations especially in production forest were planned for harvest at maturity.

Access to resources is not limited to giving the beneficiaries physical access to the resources, it also means providing the beneficiaries with resources to benefit fully from the forest resources they have been given access to. Assistance should be provided them such as access to capital so that they can put added value to the resources and not be limited to trading the raw materials derived from the forest. This is true for POs given RUPs or the rattan gatherer given the opportunity to bid for rattan production areas.

Beneficiaries, who have been given the permit to manage and utilize government-owned forest plantation areas in forest production areas, should be given assistance by government to overcome opposition by environmentalist in harvesting these plantations. Government should mount information and communication campaign to explain that forest plantations in production areas were developed to supply domestic (and foreign) demands for forest products.

2.10.10 Demand Projections for forest products

2.10.11 Demand Projections for Wood

The demand projections for wood covered in this report are those for furniture and housing. Although the requirements of the handicraft industries for wood were not taken into consideration in the determination of the demand projections, they can be covered under the high estimates.

2.10.11.1 Demand of the furniture industry for wood

The demand projections of the furniture industry for wood were based on the average export value of wood furniture for 7 years, from 1996 to 2001 (Table 2.37). The wood furniture industry grew over this period by and average about 9.37%. The average growth rate of 10% was taken as the high estimate and the low estimate of the growth rate was taken as 5%. The growth rate was projected up to 2015.

The volume of wood required to produce wood furniture whether in whole or in part was calculated from an estimate that the value of a cubic meter of wood when manufactured into furniture and exported is US$ 800 (Padiernos, E, Tesoro’s pers com). The volume of wood needed by the industry to meet the projected value of export furniture is shown in Table 2.38 for the high estimate and Table 2.39 for the low estimate. By 2015 the projected demand for wood (as logs) for furniture is 1.057 million cu m for the high estimate and 0.578 million cu m for the low estimate.

Table 2.37 Export value of wood, rattan and bamboo furniture (US$ million)

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<thead>
<tr>
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<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Wood</td>
<td>122.53</td>
<td>114.85</td>
<td>143.30</td>
<td>132.67</td>
<td>128.33</td>
<td>116.52</td>
<td>100.73</td>
<td>9.37</td>
</tr>
<tr>
<td>Rattan</td>
<td>96.94</td>
<td>91.98</td>
<td>118.02</td>
<td>112.89</td>
<td>108.26</td>
<td>123.02</td>
<td>119.29</td>
<td>-2.79</td>
</tr>
<tr>
<td>Bamboo</td>
<td>3.34</td>
<td>2.93</td>
<td>3.18</td>
<td>2.67</td>
<td>1.90</td>
<td>1.79</td>
<td>1.57</td>
<td>15.62</td>
</tr>
</tbody>
</table>

Source: Bureau of Export Trade Promotions, DTI

2.10.11.2 Demand for wood for housing

The country has a housing backlog of 2.069 units. The government targeted to build 381,241 new housing units to provide housing to a rapidly growing population. From July 2002 to June 2003, the actual number of housing units constructed was estimated to be 232,773 units, or a shortfall of 148,469 units. This number of using units is added to the backlog (dela Cruz R., 2003).

The housing needs are based on 4 main factors, namely: population growth rate of 2.34%, double occupancy of an estimated 593,356 housing units, 1.255 million housing units needing repair, and
acceptable housing units or makeshift houses comprising about 25-30 percent of houses in the urban areas.

The projected demand for wood for housing was based on the 232,773 units that are constructed annually and the number of units needing repair. It is not probable that all the units needing repair are repaired in a year. It was assumed that only 10% of the 1.255 million units needing repair are repaired in a year and that the volume of wood needed for repairs is equivalent to 25% of the volume of wood for new construction. The number of units of new construction was projected to increase by 5% every 5 years.

The projected demand for wood for housing was based on the calculations of the Forest Products Research and Development Institute (FPRDI) on a single detached unit of 32 m$^2$ of floor area, with wood trusses, concrete hollow blocks (CHB) outer wall and concrete slab, inside partition of plywood with wood studs, wood purlins, moldings, facia boards, door and window jambs made of wood and wood for scaffoldings. In converting plywood to log equivalent, 43% was used and from lumber to log, 50% was used.

The volume of wood projected to be required for new construction and for repair is shown in Table 2.39. There are no high or low estimates for wood requirements for housing.

### 2.10.11.2.1 Plantation required for wood for furniture and housing

The total projected demand for wood for both furniture and housing (new construction and repair) is shown in Table 2.39 for the high estimate (for furniture) and Table 2.40 for the low estimate (for furniture). The total projected demand is the basis for determining the area of plantation that must be developed to meet the demand. The plantation production volume of wood was assumed to be 200 m$^3$ per hectare at age 10. The total area of plantation to be developed for the high estimate is 87,157 ha and 74,327 ha for low estimate, for the period up to 2015.

### 2.10.11.2.2 Cost of plantation development for furniture and housing

The cost of plantation development is also shown in Tables 2.39 and 2.40. The unit cost per hectare is taken at P20,000 and projected to increase by 10% every 5 years. The assumed unit cost of P20,000 per hectare may seem low but this takes into consideration plantation development by smallholders in private lands. It is assumed that the area developed by individuals without government support would certainly be much lower that P20,000/ha. This cost is assumed as the average for smallholder and large holder plantations. The yearly cost of plantation development is shown in Tables 2.39 and 2.40. The total cost of plantation development to meet the projected wood demands for furniture and housing is P1,973.33 million for high estimate and P1,672.39 million for low estimate.
Table 2.38. Wood demand projections for furniture and housing.

<table>
<thead>
<tr>
<th></th>
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</tr>
</thead>
<tbody>
<tr>
<td>Export value(^1)</td>
<td>134.78</td>
<td>163.08</td>
<td>197.33</td>
<td>238.77</td>
<td>288.91</td>
<td>349.58</td>
<td>422.99</td>
</tr>
<tr>
<td>Wood needed(^2)</td>
<td>168,474</td>
<td>203,854</td>
<td>246,663</td>
<td>298,462</td>
<td>361,139</td>
<td>436,979</td>
<td>528,744</td>
</tr>
<tr>
<td>In log form</td>
<td>336,948</td>
<td>407,708</td>
<td>493,326</td>
<td>596,924</td>
<td>722,278</td>
<td>873,958</td>
<td>1,057,488</td>
</tr>
<tr>
<td>Wood available(^3)</td>
<td>1,020,000</td>
<td>1,020,000</td>
<td>969,000</td>
<td>969,000</td>
<td>920,550</td>
<td>920,550</td>
<td>920,550</td>
</tr>
<tr>
<td>Target housing units(^4)</td>
<td>381,241</td>
<td>381,241</td>
<td>400,303</td>
<td>400,303</td>
<td>420,331</td>
<td>420,331</td>
<td>420,331</td>
</tr>
<tr>
<td>Actual units built(^6)</td>
<td>232,773</td>
<td>232,773</td>
<td>244,412</td>
<td>244,412</td>
<td>256,632</td>
<td>256,632</td>
<td>256,632</td>
</tr>
<tr>
<td>Wood needed(^6)</td>
<td>1,336,117</td>
<td>1,336,117</td>
<td>1,402,925</td>
<td>1,402,925</td>
<td>1,473,068</td>
<td>1,473,068</td>
<td>1,473,068</td>
</tr>
<tr>
<td>Units for repair(^7)</td>
<td>125,500</td>
<td>125,500</td>
<td>131,775</td>
<td>131,775</td>
<td>138,364</td>
<td>138,364</td>
<td>138,364</td>
</tr>
<tr>
<td>Wood needed(^8)</td>
<td>180,092</td>
<td>180,092</td>
<td>189,756</td>
<td>189,756</td>
<td>199,244</td>
<td>199,244</td>
<td>199,244</td>
</tr>
<tr>
<td>Total wood needed(^9)</td>
<td>1,853,157</td>
<td>1,923,917</td>
<td>2,086,007</td>
<td>2,189,605</td>
<td>2,394,590</td>
<td>2,546,270</td>
<td>2,729,800</td>
</tr>
<tr>
<td>Difference</td>
<td>633,157</td>
<td>903,917</td>
<td>1,117,007</td>
<td>1,220,605</td>
<td>1,474,040</td>
<td>1,625,720</td>
<td>1,809,250</td>
</tr>
<tr>
<td>Plantation needed(^10)</td>
<td>4,166</td>
<td>4,520</td>
<td>5,585</td>
<td>6,103</td>
<td>7,370</td>
<td>8,129</td>
<td>9,046</td>
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<tr>
<td>Plantation cost(^11)</td>
<td>83,32</td>
<td>90.40</td>
<td>122.87</td>
<td>134.27</td>
<td>178.35</td>
<td>196.72</td>
<td>218.91</td>
</tr>
</tbody>
</table>

1. The 2003 export value (in US$ million) is the base on 2002 data with adjusted to 10% annual growth rate for high estimate based on historical data, low estimate is 5% based on 7 year trend.
2. Volume of lumber (cubic meters) needed by furniture industry.
3. Based on average production and imports (less exports) for last 5 years, decreases at a rate of 5% every 5 years (Source: www.manilatimes.net/nationa/2003/jul/31), log form, 50% conversion rate from logs to lumber.
4. Number of housing units (381,241) targeted by government for construction, and projected to increase at 5% every 5 years.
5. Units actually constructed (232,773) and projected to increase at 5% every 5 years.
6. Lumber and plywood used in a 32 sqm house with wood trusses, CHB walls, wooden interior walls, purlins, mouldings, facia boards, door & window jams, and scaffolding, 5.74 m\(^3\) of logs needed per house including plywood used for interior walls and ceiling.
7. Units needing repair, 10% of estimated total units (1,255,000), units for repair projected to increase by 5% every year.
8. Assumed that 25% of wood requirement of new unit is needed for repair (1.44 m\(^3\)/unit, includes lumber and plywood).
9. Sum of wood required for furniture, new housing units and for repair of old units.
10. Plantation output is assumed as 200 m\(^3\) per hectare at year 10.
11. Cost of plantation development is P20,000 per ha and increases by 10% every 5 years, in million pesos.
Table 2.39. Wood demand projections for furniture and housing

<table>
<thead>
<tr>
<th></th>
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<th></th>
<th></th>
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</thead>
<tbody>
<tr>
<td>Export value</td>
<td>128.65</td>
<td>141.84</td>
<td>156.38</td>
<td>172.41</td>
<td>190.08</td>
<td>209.56</td>
<td>231.04</td>
</tr>
<tr>
<td>Wood needed</td>
<td>160.816</td>
<td>177.300</td>
<td>195.473</td>
<td>215.509</td>
<td>237.598</td>
<td>261.952</td>
<td>288.803</td>
</tr>
<tr>
<td>In log form</td>
<td>321,632</td>
<td>354,600</td>
<td>390,946</td>
<td>431,018</td>
<td>475,196</td>
<td>523,904</td>
<td>577,606</td>
</tr>
<tr>
<td>Wood available</td>
<td>1,020,000</td>
<td>1,020,000</td>
<td>969,000</td>
<td>969,000</td>
<td>920,550</td>
<td>920,550</td>
<td>920,550</td>
</tr>
<tr>
<td>Target housing units</td>
<td>381,241</td>
<td>381,241</td>
<td>400,303</td>
<td>400,303</td>
<td>420,318</td>
<td>420,318</td>
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<tr>
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<tr>
<td>Wood needed</td>
<td>1,336,117</td>
<td>1,336,117</td>
<td>1,402,925</td>
<td>1,402,925</td>
<td>1,473,068</td>
<td>1,473,068</td>
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<tr>
<td>Units for repair</td>
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<td>125,500</td>
<td>131,775</td>
<td>131,775</td>
<td>138,364</td>
<td>138,364</td>
<td>138,364</td>
</tr>
<tr>
<td>Wood needed</td>
<td>180,092</td>
<td>180,092</td>
<td>189,756</td>
<td>189,756</td>
<td>199,244</td>
<td>199,244</td>
<td>199,244</td>
</tr>
<tr>
<td>Total wood needed</td>
<td>1,837,641</td>
<td>1,870,809</td>
<td>1,983,627</td>
<td>2,023,699</td>
<td>2,147,508</td>
<td>2,196,216</td>
<td>2,249,918</td>
</tr>
<tr>
<td>Difference</td>
<td>817,841</td>
<td>850,809</td>
<td>1,014,627</td>
<td>1,054,699</td>
<td>1,226,958</td>
<td>1,287,666</td>
<td>1,339,368</td>
</tr>
<tr>
<td>Plantation needed</td>
<td>4,089</td>
<td>4,254</td>
<td>5,073</td>
<td>5,273</td>
<td>6,135</td>
<td>6,378</td>
<td>6,647</td>
</tr>
<tr>
<td>Plantation cost</td>
<td>81.78</td>
<td>85.08</td>
<td>111.61</td>
<td>116.01</td>
<td>148.47</td>
<td>154.35</td>
<td>160.86</td>
</tr>
</tbody>
</table>

1 The 2003 export value (in US$ million) is the base 2002 projection, with 10% annual growth rate for high estimate based on historical data, low estimate is 5% based on 7 year trend.
2 Volume of lumber (cubic meters) needed by furniture industry.
3 Based on average production and imports (less exports) for last 5 years, decreases at a rate of 5% every 5 years (Source: www.manilatimes.net/nationa/2003/jul/31), log form, 50% conversion rate from logs to lumber.
4 Number of housing units (381,241) targeted by government for construction, and projected to increase at 5% every 5 years.
5 Units actually constructed (232,773) and projected to increase at 5% every 5 years.
6 Lumber and plywood used in a 32 sqm house with wood trusses, CHB walls, wooden interior walls, purlins, moldings, facia boards, door & window jambs, and scaffolding, 5.74 m$^3$ of logs needed per house including plywood used for interior walls and ceiling.
7 Units needing repair, 10% of estimated total units (1,255,000), units for repair projected to increase by 5% every year.
8 Assumed that 25% of wood requirement of new unit is needed for repair (1.44 m$^3$/unit, includes lumber and plywood).
9 Sum of wood required for furniture, new housing units and for repair of old units.
10 Plantation output is assumed as 200 m$^3$ per hectare at year 10.
11 Cost of plantation development is P20,000 per ha and increases by 10% every 5 years, in million pesos.

2.10.11.3 Rattan demand projections for furniture

2.10.11.3.1 Demand projections for rattan

The demand projections for rattan for furniture manufacture are shown in Table 2.40. The projections were based on the average export value of rattan furniture over a 7-year period from 1996 to 2002 (Table 2.37). The average growth rate of the export value of rattan furniture over this period was –2.79%. However, the industry is optimistic that the rattan furniture segment of the industry will rebound soon. It was assumed that the growth rate be 5% for high estimate and 3% for low estimate. The export value of rattan furniture was projected up to 2015.

It was estimated that a lineal meter of rattan when manufactured into furniture has an export value of US$2.3 (Padiernos, E, Tesora’s pers com). This value was used to convert the projected export value of rattan furniture into lineal meters of rattan. The projected demand for rattan was compared to the available volume of rattan. The available rattan was based on the average production for 5 years and made to decrease by 10% every 5 years. The projected requirements for rattan will grow to 79.48 million lm by 2015.
Table 2.40. Rattan demand projections for furniture.

<table>
<thead>
<tr>
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<th>2003</th>
<th>2005</th>
<th>2007</th>
<th>2009</th>
<th>2011</th>
<th>2013</th>
<th>2015</th>
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<tr>
<td><strong>High Estimates</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Export Value</td>
<td>101.79</td>
<td>112.22</td>
<td>123.72</td>
<td>136.40</td>
<td>150.39</td>
<td>165.80</td>
<td>182.79</td>
</tr>
<tr>
<td>Rattan Needed (lm)</td>
<td>44.25</td>
<td>48.79</td>
<td>53.79</td>
<td>59.31</td>
<td>65.39</td>
<td>72.09</td>
<td>79.48</td>
</tr>
<tr>
<td>Difference</td>
<td>22.47</td>
<td>27.01</td>
<td>33.10</td>
<td>38.62</td>
<td>45.73</td>
<td>52.43</td>
<td>59.82</td>
</tr>
<tr>
<td>Plantation needed</td>
<td>4,682</td>
<td>5,627</td>
<td>6,896</td>
<td>8,045</td>
<td>9,526</td>
<td>10,923</td>
<td>12,462</td>
</tr>
<tr>
<td>Plantation cost</td>
<td>77.25</td>
<td>92.85</td>
<td>125.16</td>
<td>146.02</td>
<td>190.19</td>
<td>218.08</td>
<td>248.80</td>
</tr>
<tr>
<td><strong>Low Estimates</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Export Value</td>
<td>99.85</td>
<td>105.93</td>
<td>112.38</td>
<td>119.22</td>
<td>126.48</td>
<td>134.19</td>
<td>142.36</td>
</tr>
<tr>
<td>Rattan needed (lm)</td>
<td>43.41</td>
<td>46.06</td>
<td>48.86</td>
<td>51.84</td>
<td>54.99</td>
<td>58.34</td>
<td>61.90</td>
</tr>
<tr>
<td>Difference</td>
<td>21.63</td>
<td>24.28</td>
<td>28.17</td>
<td>31.15</td>
<td>35.33</td>
<td>39.68</td>
<td>42.24</td>
</tr>
<tr>
<td>Plantation needed</td>
<td>4,506</td>
<td>5,057</td>
<td>5,869</td>
<td>6,488</td>
<td>7,361</td>
<td>8,268</td>
<td>8,799</td>
</tr>
<tr>
<td>Plantation cost</td>
<td>74.35</td>
<td>83.44</td>
<td>106.52</td>
<td>117.76</td>
<td>146.96</td>
<td>165.07</td>
<td>175.67</td>
</tr>
</tbody>
</table>

1. The 2003 export value (in US$ million) is the base on 2002 projection, with 5% annual growth rate based for high estimate on historical data, low estimate is 3%. A lineal meter of rattan as furniture has export value of $2.30 (Source: Industry)
2. Million lineal meters
3. Based on average production for last 5 years, decreases at a rate of 10% every 5 years
4. Area in hectares, based on average of 400 hills/ha, average yield of 4,800 lm/ha at age 15
5. Plantation cost, in million pesos (P16.500/ha), is based on MC 2000-19, increases by 10% every 5 years

2.10.11.3.2 Plantation required for rattan furniture

The area of plantation needed to meet the demand for rattan for furniture manufacture for high and low estimates are shown in Table 2.39. The volume of rattan that must come from plantations was determined by taking the difference between the volume of rattan available from current sources and the volume of rattan needed by industry. This volume was then converted into area of plantation by assuming that plantation of rattan would have about 400 hills and produces 4,800 lineal meters per hectare at age 15 (Lapis A., 2003). It is projected that the area needed for rattan will 12,462 ha for high estimate and 8,799 ha for low estimate by 2015.

2.10.11.3.3 Cost of rattan plantation development

The cost per hectare was taken as P16,500/ha based on MC 2000-19. The cost was assumed to increase by 10% every 5 years. The total amount needed for the 14 year projection was estimated to be P2,098.11 million for the high estimate and P1,677.47 million for the low estimate.
2.10.11.4 Bamboo demand projections for furniture

2.10.11.4.1 Demand projections for bamboo

Bamboo furniture is among the fastest growing segment of the furniture industry. Based on a 7-year performance of this industry segment, it posted a growth rate of over 15%. The export performance of the bamboo furniture industry was projected at growth rate 15% for the high estimate and at 10% for the low estimate. The volume of bamboo required to meet the projected export value of bamboo furniture was determined on the basis of US$ 7.8 export value of 1 piece of bamboo (7 m long), (Padiernos, E, Tesoro’s pers com). The amount of bamboo available was projected up to 2015 on the basis of the average bamboo production for 15 years. The projected available volume was assumed to decrease at a rate of 5% every 5 years (Table 2.40).

2.10.11.4.2 Bamboo plantation development

The difference between the projected available volume and the project volume needed by the industry to meet the projected export of bamboo furniture was the basis for the determination of the amount of plantation that needs to be established. It was assumed that a bamboo plantation with 200 hills/ha would be able to produce 1,000 pieces annually at age 7 and onwards (Umali, P., 2000). The projection shows that from 2002 to 2007 the available amount of bamboo is higher than the volume demanded by the industry for the high estimate and from 2002 to 2009 for the low estimate. The total amount of plantation needed to be established up to 2015 was estimated to be 6,928 ha for the high demand estimates and 2,032 for the low estimate (Table 2.41).

Table 2.41. Bamboo demand projections for furniture.

<table>
<thead>
<tr>
<th></th>
<th>2003</th>
<th>2005</th>
<th>2007</th>
<th>2009</th>
<th>2011</th>
<th>2013</th>
<th>2015</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>High Estimates</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Export Value</td>
<td>3.85</td>
<td>5.09</td>
<td>6.73</td>
<td>8.89</td>
<td>11.76</td>
<td>15.56</td>
<td>20.57</td>
</tr>
<tr>
<td>Bamboo Needed</td>
<td>493,017</td>
<td>562,014</td>
<td>862,289</td>
<td>1,140,377</td>
<td>1,508,149</td>
<td>1,994,527</td>
<td>2,637,762</td>
</tr>
<tr>
<td>Bamboo available</td>
<td>908,000</td>
<td>908,000</td>
<td>862,600</td>
<td>862,600</td>
<td>819,000</td>
<td>819,000</td>
<td>819,000</td>
</tr>
<tr>
<td>Difference</td>
<td>415,983</td>
<td>282,986</td>
<td>311</td>
<td>277,777</td>
<td>689,149</td>
<td>1,175,527</td>
<td>1,817,962</td>
</tr>
<tr>
<td>Plantation needed</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>278</td>
<td>689</td>
<td>1,176</td>
<td>1,818</td>
</tr>
<tr>
<td>Plantation cost</td>
<td>7.61</td>
<td>20.76</td>
<td>35.43</td>
<td>54.77</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Low Estimates</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Export Value</td>
<td>3.68</td>
<td>4.45</td>
<td>5.39</td>
<td>6.52</td>
<td>7.77</td>
<td>9.54</td>
<td>11.54</td>
</tr>
<tr>
<td>Bamboo needed</td>
<td>471,581</td>
<td>570,613</td>
<td>690,442</td>
<td>835,435</td>
<td>1,010,876</td>
<td>1,223,160</td>
<td>1,480,024</td>
</tr>
<tr>
<td>Bamboo available</td>
<td>908,000</td>
<td>908,000</td>
<td>862,600</td>
<td>862,600</td>
<td>819,000</td>
<td>819,000</td>
<td>819,000</td>
</tr>
<tr>
<td>Difference</td>
<td>436,419</td>
<td>337,387</td>
<td>172,158</td>
<td>27,165</td>
<td>191,876</td>
<td>404,160</td>
<td>561,024</td>
</tr>
<tr>
<td>Plantation needed</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>192</td>
<td>404</td>
<td>561</td>
<td></td>
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<tr>
<td>Plantation cost</td>
<td>5.78</td>
<td>12.17</td>
<td>16.90</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

1 The 2003 export value (in US$ million) is the base on 2002 projection, with 15% annual growth rate high estimate based on historical data, low estimate is 10%. A piece of bamboo has export value of $7.80 as furniture (Source: Industry)
2 Number of pieces (7 m average length)
3 Based on average production for last 5 years, decreases at a rate of 5% every 5 years
4 Area in hectares, based on average of 200 hills/ha, average yield of 1,000 piece/ha at age 7
5 Plantation cost, in million pesos (P24.900/ha), is based on MC 2000-19, increases by 10% every 5 years

2.10.11.4.3 Cost of Bamboo Plantation Development

The cost of plantation development was also calculated and shown in Table 2.40 for both high and low demand estimates. The plantation cost was based on MC 2000-19 and assumed to increase by 10%
every 5 years. The total cost of plantation development for the high estimate is P206.38 million for the high estimate and P61.06 million.

2.10.12 Provide New Technologies

The shift in the production areas from the virgin forests to the second growth forest resulted in the harvest of smaller diameter logs, the increased use of lesser-known/used species and the increased use of plantation grown species in applications where the common commercial species were utilized. This means that government should provide industry the processing technologies for these species.

In 1991-1994 the International Tropical Trade Organization (ITTO) provided grant funds to the Forest Products Research and Development Institute (FPRDI) to conduct research on the utilization of small-diameter logs including tree-tops and branches. The study generated technologies on the processing from sawmilling, drying and machining as well as identified suitable uses of these species. However, the results of this study have not been fully utilized by the wood-processing sector. The Paper Industries Corporation of the Philippines (PICOP) adopted the saw-dry-rip technology for sawing tree-tops and branches. From the ITTO study two technology publications in CD form have been published by FPRDI, namely Field Guide to the Identification of Important Lesser Used Species of Philippine Timbers, and Manual on the Properties and Uses of Lesser Used Species of Philippine Timbers.

One drawback in the utilization of tree tops and branches is economic in nature. The cost of collecting and transporting these raw materials is higher compared to large diameter logs since the cost of collection and transport of these two types of materials is more or less the same.

In 1990 the Philippines had an estimated volume of 0.413 million cu m of lesser-used species (LUS) with 70 cm diameter and larger, 0.771 million cu m of diameter 60 cm and larger and about 1.183 million cu m of diameter 50 cm and larger (Bello, E. and A. Moistero, 1997). About 9.8% of the total volume of trees harvested in the natural forest is LUS. To promote the utilization of LUS the ITTO also funded in 1993 a 5-year project at the FPRDI on the “Utilization of Lesser-Used Species as Alternative Raw Materials for Forest-Based Industries”.

The physical, strength and processing properties, such as sawmilling, drying, machining, finishing, natural durability and treatability with preservatives, of these species of 39 species were studied. Likewise, the end uses such as posts, sills, beams, joists, rafters, flooring, etc. were studied. Publications on the properties and uses of these LUS were prepared and disseminated. The use of LUS in the manufacture of parquet flooring, mill works, pallets, treatment of materials for poles and wood bending were piloted for more than two years with the private sector. It is not known whether any of the cooperators continue to use these species for the production of their products.

Despite extensive technology transfer and promotional activities only two electric cooperatives, one in Isabela and the other in Ilocos Norte adopted the use of LUS for poles treated with preservatives through the High Pressure Sap Displacement Method (HPSD), (Pabuayon, C., 2003, Tesoro’s pers. com.). One furniture manufacturer in Pampanga adopted the wood bending technology but had to stop because of lack of raw materials. One of the barriers in the adoption of technologies in the utilization of LUS lies in the size of most of these species. The harvest of trees from the natural forest allow only the cutting of trees not less 60 cm in diameter, except along rights-of-way, log landing, and skid trails. Furthermore, the processing of LUS requires significant capital investment for retooling (Smith, P., 2000), which is not readily available to wood processors.

Because the cost of collection and transport of LUS is higher than the commercial species their utilization should be in the manufacture of higher value added products such as mill works and furniture. However, since the supply of individual species is rather limited the utilization of these species should be one that allows grouping or clustering. Their use as construction materials allow grouping of species. Furthermore, the perception that they are inferior to commercial species has to be overcome before they become acceptable to lumber users. The use of machine stress-graded lumber where the lumber, is graded

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according to its inherent strength properties and not because it belongs to the popularly used species, could overcome the negative perception of LUS.

Machine stress grading of lumber is another ITTO project at the FPRDI. The technology has been piloted in two sawmills, one in Aurora and the other in Quezon City. Three lumber producers are now willing to adopt the technology and are just waiting for the standards for machine stress-graded lumber which is now being formulated by the Bureau of Product Standards before they acquire the machine. Two of the firms are in Cebu and the other in Mandaue City.

The government has been generating technologies for the wood-based industries. There are however, some barriers in the adoption of these technologies by the private sector. A mechanism is needed to liaison between the technology generators and the industry for the faster transfer and adoption of the technologies.

The harvest of LUS is guided by rules and regulations that apply to the common commercial species particularly in diameter limit requirements. LUS by nature have small diameters and if the minimum cutting diameter of 60 cm is applied only a small volume of LUS can be harvested thus limiting its prospects for wider utilization and the prospects of augmenting very limited wood resources. It is suggested that government reviews this policy.

There are technologies on the utilization of LUS. However, these are not being adopted by the processing sector. Government must also review and strategize how the technologies can be effectively transferred to industry.

Government research organization should also consider breeding studies to improve the growth rate of LUS and similar species.
2.11 Policy and Institutions

2.11.1 Introduction

Following the Rio Summit of 1992 (UNCED, 1992), the “Master Plans” supported by Asian Development Bank, the Sector Studies supported by the World Bank and the Tropical Forestry Action Plans and the National Forestry Action Plans (Programmes) sponsored by FAO/UNDP have all been brought under the umbrella of a National Forest Programme (NFP) global framework. IPF/UNCSD has endorsed the NFP framework (and the related principles) and recommended it for adoption by member nations. The central piece of NFP is an implementable (practical) forest policy, supported by appropriate instruments and strategies. Policies, formulated/revised/modified on the basis of detailed analyses and consultations, are implemented through long-term programmes comprising of hierarchically linked sub-programmes, programme elements, projects and activities of varying (shorter) duration, for achieving the programme objectives, which in turn will contribute to the achievement of policy objectives. Strategies are designed (including institutions, regulatory instruments, capacity building, human resource development, partnerships, resource mobilization, science and technology development, dissemination of information) to suit the policy environment. Programme implementation is to be continuously and thoroughly monitored to facilitate necessary modifications (course corrections) as the dynamics of the situation would dictate.

The National Forest Programme Development (or Master Plan for Forestry Development) is an exercise in strategic planning. Among the philosophical basis of NFP are as follows:

- NFP is a plan/programme for the forestry sector of a nation as a whole (with component regional/local plans), and not a plan/programme for the government forestry agency alone.
- It deals not only with the core aspects of the forestry sector, but also with its interfaces with other relevant sectors.
- NFP should be fully ‘owned by the nation,’ particularly by the main Planning Body of the country.
- An essential part of the NFP exercise is a policy analysis/evaluation to identify the policy/institutional reforms required, to support development of the forestry sector.
- NFP is a long term strategic plan, with a time perspective of 20 to 25 years, within which medium and short term plans for specified time slices are to be prepared.

2.11.2 Strategic Planning Concept

Strategies, when used in relation to the policy of a sector, are measures/logistics/programmes to achieve policy objectives. In that regard, they link the institutional, technical and other aspects/activities of the sector. They are the operational counterparts of principles enshrined in policies; and they influence the arrangements to get the policy implemented at various successive levels.

For example, if one of the policy objectives is to effectively conserve, rehabilitate, expand, enhance, develop and manage the forest resources as a renewable national asset, the likely policy measures would cover land use/functional classification, forest resource expansion, improvement of productivity, management planning and implementation, etc. For each of these there is need to design strategies. Thus, for example, improvement of productivity may call for allocating management of production forest to the private sector or smallholders, genetic improvement of species, dissemination of research results/technology, incentive schemes and/or development of infrastructure. These are normally written into policy documents to serve as guidelines. The strategies normally concentrate on the main measures required to achieve the goal outlined. The substantive content of the individual measures to be carried out will be selected through clear priority setting, based on the situation, to ensure high probability of success and impact (FAO, 1994).

Strategy formulation should be based on a holistic approach. Different parts of the sector are interconnected and interdependent, so that changes at one point affect other parts.
Strategic planning is concerned with strategy of planning as well as planning of strategy. Policies serve to provide the strategy considerations for preparing sectoral plans; and the plans are meant to translate the policy imperatives, principles, objectives and measures into implementable proposals. Thus, often, policy development has to become part of a broad strategy and specific implementational policies are designed as part of the plan. Wherever the policy concerned is irrelevant or outdated, it will be necessary to review, modify and reformulate it, as a strategy. In fact, policy review is a part of the strategic planning process.

A strategic plan involves stakeholder participation, i.e. of those who will be affected by the plan, and consists of interrelated programmes, sequentially and/or simultaneously linked as an integrated agenda for action. Strategic planning specifies pre-conditions and considerations to ensure effective implementation; it has strong institutional bias (Chandrasekharan, 1998).

In respect of the forestry, all relevant aspects need to be considered in the strategic plan – resources inside and outside of forests, their conservation, harvesting, processing and utilisation and structure of institutions. What differentiates strategic forestry planning from traditional planning is that it makes a more comprehensive evaluation of the planning options involving wider explorations and broad themes. It analyses alternatives to decide on a realistic development path. It considers globalization of forestry issues and the multiplication of stakeholders. Strategic planning in relation to forests has the following characteristics:

- It is a means to design actions to increase the social, cultural, economic, and environmental benefits from trees and forests;
- It has a strong programme/management orientation, since a programme strategy should state specific goals, specific activities, and specific target groups;
- It is much more than a set of projects, although projects are one type of instrument for achieving certain goals. (Programmes represent strategies, and projects are often ‘time slices’ of ongoing programmes).

### 2.11.3 Brief History of Philippine Forestry

A system of forest administration was initiated in Philippines in 1863 with the creation of the Office of “Inspeccion General de Montes.” As early as in 1894, by virtue of a Royal Decree, no land of the public domain was allowed to be sold unless properly surveyed, its boundaries marked out, measured and certified by the Inspeccion General de Montes, as alienable and disposable.

In May 1904, under American rule, the Forestry Act of Philippines was enacted, containing among others the Philippine Forest Policy, which continued to be the basis for all forestry operations until May 1975, when the same was expanded and made more relevant to the current situation by Presidential Decree 705.

During the period 1904 to 1987, Bureau of Forestry was under the Departments of Interior, Agriculture and Natural Resources, Agriculture and Commerce for varying lengths of time. This period also saw enactment of many laws and regulations on forestry and large scale extraction of logs for export from natural forests. Some of the milestones included:

- **1916**: Establishment of School of Forestry in the University of Philippines.
- **1950**: Commonwealth Act and large scale conversion of A & D lands for agricultural expansion.
- **1950s**: Initiation of TLAs for large scale timber extraction.
- **1953**: RA No. 828 creating Parks and Wildlife Commission which absorbed the functions of Bureau of Forestry pertaining to parks and wildlife.
- **1957**: Establishment of Forest Products Research Institute.
- **1969**: Creation of Forest Research and Industries Development Commission.
1972: Formation of the Bureau of Forest Development, merging Bureau of Forestry, Reforestation Administration, Parks and Wildlife Office (as per PD No. 1).


1975: Issue of PD 705; Bureau of Forestry Development formally organized under the provisions of PD 705.

1987: Issue of Executive Order 192 of 1987. Most regulatory functions of BFD were decentralized to the field offices known as Environment and Natural Resources Offices (ENROs). And, Bureau of Forestry Development became Forest Management Bureau (which absorbed the staff functions of Wood Industry Development Authority), with staff functions and recommendatory powers.

1990: Approval of Master Plan for Forestry Development.

1995: EO 263. Adoption of Community Based Forest Management as a national strategy.


On casual reading, all these would give an apparent / superficial impression of positive development. And, it raises a question: has the legacy in forestry been a burden or benefit?

Over the last four decades, the forestry sector in Philippines has steadily declined, leading to escalating ecological degradation and rural poverty. With the benefit of hindsight it can be seen that a number of inadequate, inappropriate or poorly implemented policies (and policy instruments) have contributed to the situation.

Philippines was one of the first few countries to start logging concessions, and also to drastically degrade/destroy its forest resources. The forest history of Philippines can be divided into five periods.

First, a period of low exploitation from the colonial era through to 1945.

Second, a period of increased forest exploitation for development during the post independence era, from 1946 to 1960. There was greater emphasis on production of timber for revenue.

Third, a period of peak logging and concession exploitation, during 1960 to 1970.

Fourth, one of attempts to build a forest products industry, between 1970 and 1980. This period saw moves towards establishing local forest products industry, but this attempt was not successful, and only encouraged illegal activities.

Fifth, one of increased emphasis on social and environmental roles of forestry.

The Philippine forest cover in 1900 was estimated at 21 million ha or about 70% of the total land area. In 1920s, this was reduced to 18 million hectares or 60% because of the great demand for tropical hardwood for export. In 1950 estimates place forest cover at 50% or 15 million hectares. Considering that 56% of the Philippines is classified as upland, the threshold in sustainable management was crossed in the 1945-1950 period, the effects of which is beginning to be felt only now in terms of loss of soil, siltation, and uncontrolled flooding.

In 1960s, FAO placed forest cover at 40% or 12 million hectares of the total land area. Logging concession areas increased from 4.5 million hectares to 11.6 million hectares, covering more than one third of the entire country.

1970s saw the forest cover dwindle to 34% of the total land area or 10.2 million hectares. From 1977 to 1980, deforestation reached an all time high – over 300,000 hectares a year. The Swedish Space Corporation (SPOT) study of 1987 placed forest cover in the Philippines at 6.9 million hectares or 23.7% of the total land area. Despite stricter government control, regional logging bans failed to slow down the annual deforestation rate. This was a period of open access and much illegal logging was done. (EC-UNDP 2002).
The Philippine-German Forestry Resource Inventory Project places forest cover at the end of 1987 at 22% or 6.6 million hectares. Since 1987, deforestation is estimated to have continued at the rate of 100,000 hectares a year. This means that at the beginning of 1999, the Philippines will have 5.5 million hectares or 18.3% of land area as forest cover.

2.11.3.1 Institutional Aspects

Institutions relating to forestry in Philippines originated towards the later part of the 19th century while it was under Spanish Colonial Rule. Laws, rules, and administrative arrangements were established to protect the colonial interest in the forests.

“Institution” is the core element in management (of a sector, resource, programme). An institution can make all the difference regarding the conditions and development of a sector. It will not be possible to solve the problems of a sector if its institutional issues are not addressed. Steering clear of the institutions or addressing institutional aspects on an ad hoc basis will only make matters worse.

2.11.3.1.1 Background

The institutions of public forest administration (PFA) in Philippines today struggle with inherent inadequacies, despite many years of faltering efforts to grow stronger. The PFA is entrusted with the following major, but conflicting, missions/functions:

- an enforcement authority, and a forest police force (without adequate ‘real authority’ in terms of appropriate legal instruments);
- an enterprises, to produce and market timber and other products (without the needed flexibility, freedom and financial control);
- servicing sectoral development through, inter alia, planning, informing, monitoring and training (without adequate means, mechanisms and capability).

PFA is marked by inadequacies in terms of commitment, funds facilities and specific skills and lack of incentives and freedom to respond to emerging situations. As a result, developmental activities are constrained by lack of a reliable information base and planning, delays in implementation of projects/activities, consistent low achievement of targets, low quality of forests and plantations, lack of funds for adequate management and maintenance activities, ineffective protection, encroachments, land abuses and illegal activities.

Even though, forestry at the farm, small estates and home stead levels was, and continues to be, practiced by people as an economic and productive activity, “forestry sector” is identified as a Government activity, dominated by the bureaucracy.

2.11.3.1.2 Historical trend

The history of forest policy in Philippines can be divided into 5 main periods: a period of low exploitation during colonial, wartime and postwar eras; a period of increased exploitation for development during the post-independence era; a peak of logging and concession exploitation during the 1960s and 1970s; one of establishing a forest products industry in the 1970s and 1980s; and the ongoing “community-based” efforts to rehabilitate the depleted and damaged forests, since 1990.

The first period was largely dominated by Spanish Royal Decreases which focused on gaining revenue and keeping the Spanish navy supplied with timber. The population was small and thus pressure on the timber resource was limited. Following the take-over of the country by the United States in 1898, the American Congress enacted the first Forest Act in 1904. This was to form the basis of forestry legislation until 1975.

The second period coincided with independence (1946) and the need to develop the country and its economy. The new constitution provided that all timber lands belonged to the state. Forest policy did not
change much, but greater emphasis was placed on the production of timber. This meant more revenue to the government, much needed to accelerate development. This period also saw the change to modern mechanized technology and hence the ability to have a major impact on the forest over a large area. Also introduced was the application of selective logging of the Dipterocarp forests. However, in practice, logging occurred without much concern for scientific principles.

The third period was the peak period of exploitation of Philippine forests, starting in the early 1960s. Harvests from the forest rose rapidly with little concern for long term sustainability of this harvest. The impetus for this “rush to destruction” came from three sources. The large multi-national logging companies were able to make enormous profits from the continued growth of harvesting volumes, often in association with local business people and the government. The government almost took pride in the ever-increasing harvest which meant more foreign exchange and increasing revenue. By 1969, forest products constituted 33% of total export revenues, while the international forestry community warned the government of serious resource loss and ecological damages, if there was no significant change in policy. Ironically, the revenue generated was not used to restore the integrity of the forest resources and to scientifically manage them.

The fourth period saw a move towards a local forest products forestry. During the 1960s and 1970s, as much as 80% of the recorded log production was exported as logs; processing into lumber and plywood was almost seen as a residual industry. The move towards wood-based industrialization led to further deforestation. As already seen, parallel efforts at reforestation and rehabilitation of forests did not meet with the desired success.

The ongoing efforts to promote community-based forest management have not so far helped to contain deforestation and other illegal activities, nor to promote forest plantations. The initiatives are riddled with institutional weaknesses.

Important institutional aspects which need to be reviewed periodically for their effectiveness and relevancy are: policy, legislation (along with rules and regulations), sectoral organizations, planning/programming/budgeting, human resource development, research and technological support and a system of monitoring and evaluation. These are closely linked.

2.11.3.1.3 System of policy instruments

Policies, being an instrument of stability and of long term nature, are often promulgated separated from the related laws and implementing rules and regulations. In few countries the policies and IRR pertaining to a sector are legislated as one Basic Law. In others the policy and major laws are separately legislated, where as the rules and regulations relating to procedures and administrative matters are made by the executive branch, based on powers delegated as per the enabling policies and laws.

The term ‘policy’ generally refers to the principles that govern action directed towards given ends. It defines agreed-upon or settled courses of action, adopted and followed by Governments and institutions. A policy provides an important means to achieve some ends. The effectiveness of policy can, therefore, be judged only in terms of achievement of the ends or goals, without causing any undesirable cost to the society.

Categories of policies differ depending on their coverage, scope and purpose. At the national level, the country’s Constitution represents the ultimate policy and law. Next in hierarchy are the major national policies such as the economic policy, trade policy, investment policy, land use policy, and environmental policy. Most important national objectives such as social equity, quality of life, poverty alleviation, capital formation, income growth, investment and environmental conservation are setout in these policies. Provisions contained in these policies supersede those of the sector and lower level policies. The specific sectoral policies such as forest policy and agricultural policy form the next lower level. (In some cases, there are also sub-sectoral policies or policies relating to specific aspects of a sector, e.g. policy on forest plantations, as dictated by circumstances). Policies are not mutually exclusive, as various policy levels must be closely linked and free from conflicts.
2.11.3.2 Forest Sector policy

A national forest sector policy specifies certain principles regarding the use of a Nation's forest resources, which it is believed will contribute to the achievement of national objectives. Objectives of the sectoral policies will be linked or related to enhancing the direct or indirect contribution of the sector to achieve the larger national objectives. Early forest policies tended to consider timber production as the primary function of the forest. In today's context, a multiplicity of interests compete for forest outputs and correspondingly forest policies have become increasingly complex.

Forest sector policies can be in the nature of a manifesto, listing broad objectives, or as a portfolio, setting quantitative targets and specific goals to be achieved within a defined time-frame. If the policy objectives are to conserve, rehabilitate, replenish, expand, enhance, develop and manage the forest resources of the country as a renewable asset to meet the needs for forest goods and services, then the policy should clearly and quantitatively define the scope of each component of the objectives and specify how the quantified objectives will be achieved, indicate the phasing and time-frame and detail the strategic and institutional measures required.

In the past, forest sector policies had tended to be of manifesto type. With increasing emphasis on transparency and accountability in public affairs, need for rigid monitoring and evaluation, and social auditing of policy implementation more and more policies are being developed in the nature of portfolios.

2.11.3.2.1 History of Policy Development

The Forest Act of 1904 (Act 1148) passed by the US Congress has been the basis of forestry regulations in the country until the middle of the 1970s when PD 705 was promulgated. The revised Administrative Code of 1917 (Act 2711) reiterated the basic forest policy stating thus: “The public forests 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”. This statement is akin to the principle of SFM of today.

The Philippine Constitutions of 1935 and 1973, the Commonwealth Act 141 of 1936 (Public Land Act), and PD 389 of 1974 (Forestry Reforms Code) had policy statements and guiding principles relating to forestry. However, the main thrust of forestry regulations in the 1900s up to the middle of the 1970s was primarily directed toward the utilization of the forest.

PD 705 of 1975 embodies most of the regulations on the management, administration, regulation, utilization, protection, and development of forest resources in the country. The Code adopted the following policies:

- The multiple use of forest lands to be oriented to the development and progress requirements of the country, advancement of science and technology, and 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 forest land to be emphasized to ensure their continuity in productive condition.

2.11.3.2.2 1987 Constitution of the Philippines

Article XII, Section 2 of the new Constitution states that the exploration, development and utilization of natural resources shall be under full control and supervision of the State. The State may directly undertake such activities, or it may enter into co-production, joint venture or production sharing agreements with Filipino citizens or corporations or associations at least 60% of whose capital is owned by such citizens, corporations or associations. This Constitutional provision opens up immense possibilities for establishing participatory, transparent, accountable forestry institutions capable of translating policies into practice.
The Constitution also underlines the need for forest property demarcation: “State shall enforce and people shall respect the forest boundary.

2.11.3.2.3 Current Situation of Forest Policy of Philippines.

The lynchpin of forest policy in Philippines remains to be the PD 705, as amended by PDs 865, 1559 and 1775, EOs 273 and 277, and RA 7161. The code is divided into four key chapters on:

- Organization and Jurisdiction of the Bureau of Forest Development;
- Classification and Surveys of Land;
- Utilization and Management of Forests with sub-topics on timber resources, wood processing, reforestation, forest protection, and special uses and qualifications for the grant of the privilege to utilize, exploit, occupy or possess forest lands;
- Incentives, Offenses and Penalties.

The policy implementation strategy as propounded in PD 705 are based on:

- Management of productive forests
- Reforestation
- Stabilization of upland communities
- Protection of critical watersheds

As can be noted, PD 705 was drawn up when the major thrust of Philippines forestry was towards massive commercial exploitation of the vast state-owned natural forests by large corporations. Now that the focus has shifted towards people-oriented, small-scale, community-based forest management, covering man-made forests as well as the meager remaining natural forests, PD 705 has become somewhat obsolete. The strategies failed for lack of proper application or enforcement of the basic principles – for example, while the principles of selective logging and AAC are sound, in practice they were never applied faithfully. Reforestation strategy failed because there was no insistence on efficiency and quality and no attention on after-care.

The Philippine Master Plan for Forestry Development (1990), prepared with the support of ADB/FINNIDA was an important effort to improve the situation in terms of policy, structured programmes and action. MPFD also proposed a new comprehensive policy in the form of a Sustainable Forest Management Act. The proposed SFM Act is still pending with the national legislative bodies. In fact, MPFD proposals were overtaken by several events in the meanwhile; and, the MPFD itself was set aside with changing administrations and changing priorities. Ad hoc changes took place in the policy and institutional arena which influenced and impacted on the situation of forestry in the country. Various forestry-related laws and administrative issuances recently introduced (since 1990) have been touched upon elsewhere in this report. Some of the important ones among these are:

- RA 7160 of 1992 (Local Government Code)
- RA 7161 of 1992 (New rates of forest charges and ban on cutting mangrove trees)
- RA 7586 of 1992 (NIPAS Law)
- DAO 02 of 1993 (Rules and regulations for identification, delineation and recognition of ancestral land and domain claims)
- EO 247 of 1995 (Prospecting of biological and genetic resources)
- EO 263 of 1995 (CBFM as national strategy for sustainable development of the country’s forest)
- Philippine Agenda 21 (1995)
- MC 13 of 1997 (adopting Strategic Action Plan for CBFM for 25 years, with targets differing form MPFD)
• RA 837 of 1997 (IPRA law)
• RA 8425 of 1998 (Social reform and poverty alleviation programme)
• AO 01 of 1998 (Implementing rules and regulations for IPRA)

While most of the provisions of PD 705 are still considered as operational, there have thus been major changes in policies and IRRs influencing sustained yield forest management, multiple-use forest and land management, land classification and sub classification, forest utilization by the private sector, forest products disposal through licensing and forest charges system, rationalization of the wood-based industries, selective logging system, government reforestation, proliferation of agencies with forestry functions, log export quota/log export ban, integrated social forestry, industrial tree/forest plantations, wood production by forest concessionaires and so on through a maze of decrees, orders, directives, letters of instructions, circulars and memoranda (EOs, DAO, DMs, DCs).

The present state and inadequacies of forestry policies has come about because of a vicious cycle of administration by regulation.

The policy scene is made more confusing through (policy related, policy type) statements found in medium-term plans, annual operational plans, project documents, official reports/documents, workshop papers, meeting recommendations etc which tend to be recycled. These lead to a mix-up of vision, mission, principles/mandates, objectives, thrusts, strategies, directions, programme areas, IRRs and guidelines which to a great extent are overlapping and superfluous (instead of crystallising an effective set of policy measures and identifying appropriate means of implementing those measures). Thus, one finds a series of comparable policy objectives¹ and strategies², in the official documents.

A number of piecemeal policies, relating to or relevant to forestry, with individual policies changing constantly without reference to its impact on others cannot be a substitute for a cogent, comprehensive and consolidated forest sector policy, sections/parts of which are internally consistent.

The collection of policies and their IRRs (without any clearly defined hierarchy) tend to contradict, conflict and overlap with each other, and does not adequately serve sectoral development. Examples of the contradictions/conflicts are several, e.g. relating to forest use in mangroves, watersheds, TLAs/CBFM areas etc. These have all been eloquently brought out in various studies/reports (ADB 2000a; Dalmacio, 1999; DENR, 2002a; Ganapin, 2001; Guiang 2001; Ramos, 2000; SUSTEC 2001; Tesoro, 1999; Vitug, 1993). Thus, the collection of policies become a mixed bag of keywords and concepts (ranging from mundane to sublime) without any collective/holistic purpose.

As can be noted, while there is no legislated forest sector policy in Philippines (the existing policy is a PD of 1975), there are RAs for a component aspects of forestry (e.g. RA 7161 of 1992 regarding forest charges and ban on cutting mangrove trees), which is a strange situation of skewed priorities.

Also, some of the provisions of the revised Forestry Code (PD 705) cannot be properly implemented. For example, the policy declaration that areas with 18 percent slope should all be forest lands, thus preventing permanent tenure status to even well-developed communities within such lands, is an extremely difficult policy to enforce given that an estimated one-third of the population occupies these so-called uplands. The strict enforcement of such a policy is socially, economically, and politically impractical. In addition, there has been no extensive ground delineation of such areas (Ganapin 2000).

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. This situation gives rise to a felt and real need for a comprehensive forest sector policy to guide new legislation, new initiatives, new plans and programs, and day-to-day decisions to address current and expected concerns, problems and challenges in sustainable forest resources conservation, development, management and utilization. The
passage of a bill on sustainable management of forest resources (House Bill No. 1713 known as New Forestry Code) was submitted to the Congress in 1990. The Bill has not yet been passed. Reason for the delay is not clear. It is understood that the draft of the bill on sustainable management of forest resources is being recast into an EO; and that it is likely to be approved in that form.

A comprehensive draft Forest Policy (called as PFP 2001) was prepared by a team of senior Philippino experts under the banner of SUSTEC and supported by World Bank. The draft has gone through several rounds of discussion. It is hoped that the new EO on sustainable management of forest resources would incorporate the important concerns identified in PFP 2001.

Irrespective of what is contained in the policy documents, a very important problem in Philippines has been the lack of implementation/enforcement due to weak, inadequate and inappropriate organisational structure.

2.11.3.2.4 Non-Forest Laws Impinging on the Forestry Sector

Public Land Act

Commonwealth Act 141 of 1936, otherwise known as the Public Land Act, has played a major role in national development, particularly in accelerating economic progress through disposition of public lands (Alienable and Disposable Land), that stabilizes tenurial right. It has been the law governing the disposition and management of lands of the public domain for almost seven decades now. During the Spanish regime, the governing law concerning public lands was the Maura Law and this was superseded by the Philippine Bill of 1902 and then by Act of the Philippine Commission. Land can never be productive unless the same will be issued a title, and the issuance of certificate of title sparks commercial activities that will be result in the infusion of capital in the market economy, the life blood of social development. With the advent of modern technologies, and in the light of the present needs, the Public Land Act is to be considered obsolete and unrealistic. Hence the revision/amendment has become, imperative. The House Bill No. 1253 known as “Land Code of the Philippines” has unfortunately not become a law, and it is known to have been re-filed. Once it becomes law, the nagging problems affecting public land, such as the proliferation of fake titles, sustainable use of foreshore lands and problems related to land survey matters, can be aptly addressed through responsive regulatory mechanism. It could also facilitate the establishment of a permanent land base.

Local Government Code

The democratic elections held in 1986 and the promulgation of RA 7160 (Local Government Code) in 1991, have resulted in a range of changes including provisions for decentralization of powers and much greater involvement of the people in decision making. The decentralization process is to involve the regional, provincial and community offices and is expected to result in much more robust discussion of policy matters, and much more robust policy implementation.

2.11.3.2.5 Impact of interventions in forest policy reforms

ADB had provided funding support for FSP which included a specific component on policy and institutional reforms. On evaluation, ADB found that overall implementation performance of the policy and institutional reform component was only partly satisfactory. Many of the policy measures were administrative in nature (e.g., issuance of guidelines). But these measures were rendered ineffective with frequent changes in administrative policies. Measures to address forest occupancy centered on the implementation of a census of forestland dwellers, issuance of certificates of stewardship contracts, preparation of control maps, and migration control of forest dwellers. The census was incomplete with no mapping done. Certificates of stewardship contracts were issued but holders had to contend with subsequent changes in policy disallowing thinning and pruning of planted trees. Initial success in reforestation of the denuded upland forests, a major objective, was not sustained.

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.
Absence of a single legislated forest sector policy; lack of a proper hierarchy in the system of policies; proliferation of fragmented and peacemeal policies causing conflicts and overlaps; frequent policy (and IRR) changes initiated by administration; inadequacies of policy implementation; difficulty in making structural changes in forestry organisations are some of the important issues which need to be addressed.

2.11.3.2.6 Legal matters, rules and regulations

A viable and efficient legal system is a very important instrument for effective implementation of policies, and achievement of policy objectives. The legal system covers the legislation and related rules and regulations, along with the relevant institutional and judicial system. The legal system of a country begins with its Constitution, into which the various sectors of the economy are designed to fit. Accordingly, the various sectors will have their own system of legislation which is expected to be properly co-ordinated with the other component systems.

2.11.3.2.7 Enabling role of policies

There is close linkage between policies and legal instrumentation. Policies enable development and enforcement of legal instruments to ensure compliance, to support legal and to prevent illegal actions, to establish basic conditionalities and so on.

A rational (compatible to the policy objectives and social norms) and healthy system of legal instruments is the foundation for good governance.

Hierarchical nature of legal instruments are characterized by specific objectives involved, designation of authority competent to establish the legal instrument, its currently/duration, penalty for violation, steps involved in prosecution of cases, repeal procedures and so on. In forestry the major functions of legal instruments, among others, include: safeguarding the integrity of forest estate and its boundary delineation, clarity and protection of tenure security, protection of national forest wealth/ regimes, equitable regulation of externalities (involving social costs/benefits, upstream/downstream interaction), role of conservation, rights and privileges of forest dependent communities, inter-generational equity etc.

Philippines is signatory to a number of international agreements relevant to sustainable development, including CITES; CBD; the Convention on Wetlands of International importance; the Framework Convention on Climate Change; UN Convention to Combat Desertification; and the World Heritage Convention. The CBD, the objectives of which include the conservation of biological diversity, sustainable use of the components of biodiversity, and equitable distribution of benefits arising from the use of genetic resources, is of special importance. The principles and objectives enshrined in these international agreements are to be incorporated into the national legal system.

2.11.3.2.8 National legal regime

National legal regimes for the forest sector vary widely in scope and quality. Some are overlaid with policy guidelines developed in the past, others comprise multiple instruments adopted reactively rather than proactively, and others are still emerging. Rarely do laws incorporate the concept of stewardship, or define the roles and responsibilities of all the stake holders (SUSTEC 2001).

The need for revamping, amending/consolidating and harmonising the rules and regulations (the legal system) have been recognized for several years and there had also been some interventions.

The policy and institutional reforms component of the ADB-funded FSP had resulted in 11 MCs, 7 DAOs, 4 MOs and 1 EO meant to revamp the existing rules and regulation and to support the objectives of FSP, especially the CBFM. It also supported inter-agency coordination by involving the different sectors interested in forestry by establishing Multi-sectoral Forest Protection Committees (MFPCs) for tackling “illicit” forest activities.

The TA project funded by World Bank to review forestry policies vis-à-vis the watershed and ecosystem management framework and the CBFM strategy and program (known as PFP 2001) has
considered the need to have a legal system consistent with the policy objectives/strategies. The final report of TA project includes several proposals for rationalizing/amending the existing rules and regulations (SUSTEC, 2001).

The USAID-supported eco-governance programme is seriously involved in harmonising forestry-related rules and regulations at various levels, duly identifying the different types of gaps, overlaps, contradictions, conflicts and inconsistencies in the policy, rules and regulations covering various aspects of forestry (natural forest management, forest land use, PAs and wildlife management, CBFM, watershed management), as well as conflicts between traditional practices and bureaucratic rules, and the gaps in enforcement (and/or non-observance) of existing rules, and their ethical and equity implications. Lack of accountability, transparency and people’s participation, (the three pillars of good governance) are possibly the most glaring gap or deficiency.

2.11.3.3 Structure of Forest Sector Organisations

Central to the institutional arrangement is the sectoral organisations including their structure, linkages and roles. The structure of organisations in the forestry sector is influenced by several factors – political history, ownership of forest land and policy objectives and strategies including tenurial arrangements. In the existing system, most of the sectoral organisations are linked to the public forest administration. The public forest administration (DENR) play conflicting roles – as an authority for enforcing forest laws and as an enterprise to carryout investment activities required for development of the sector. This has resulted in the DENR being inadequate, in relation to forestry, on both fronts.

2.11.3.3.1 History of PFA in Philippines

Currently, since 1987, DENR is the Government agency responsible for the management of forests, national parks and other protected areas.

PFA in Philippines traces its roots from a Spanish Royal Decree in 1863 which created the office of “Inspeccion General de Montes”, the first forestry service in the country.

As early as in 1894, by virtue of a Royal Decree, no land of the public domain was allowed to be sold unless properly surveyed, it boundaries marked out, measured and certified by the Inspeccion General de Montes, as alienable and disposable.

In April 14, 1900, the US Military Governor issued General Order No. 50 which created the Forestry Bureau under the Department of Interior. In September 6, 1901, creation of the Bureau of Forestry under the Department of Interior was confirmed through Philippine Commission Act. No. 222.

In May 1904, under American rule, the Forestry Act of Philippines was enacted containing, among others, the Philippine Forest Policy, which continued to be the basis for all forestry operations until May 1975 when the same was expanded and made more relevant to the current situation by Presidential Decree 705. In 1975, BFD was formally organized under the provisions of PD 705.

The BFD was then a line bureau which had the jurisdiction and authority over all forest land, grazing lands, and all forest reservations including watershed reservations presently administrated by other government agencies or instrumentalities.

In July 1985, Executive Order No. 1039 created the Wood Industry Development Authority (WIDA) which was responsible for the regulation, control, supervision and development of wood industry of the Philippines in all aspects.

Executive Order 192, known as the “Re-organisation Act of the DENR” issued on June 10, 1987 established the DENR in order to consolidate management of natural resources and the environment in a single agency, by reorganizing the departments of environment, energy and natural resources. Agencies other than DENR that still share some responsibility for natural resources and the environment, are the Department of Agriculture (DA) and the Department of Agrarian Reform (DAR), with respect to upland and coastal area management. However, the establishment of the DENR represents a major effort to create a natural resource and environmental lead agency. EO 192 created, among others, the Forest Management
Bureau which integrated and absorbed the powers and functions of the BFD and the WIDA except the line functions and powers, which were transferred to DENR regional offices.

Prior to 1987, the natural resource sectors were represented in the regions by their respective line bureaus. The reorganization saw the integration of these bureaus on the field level with the intention that DENR functions are decentralized on the regional, provincial and community levels and that environmental and natural resources issues and concerns in the field will be addressed in an integrated and holistic manner. The central offices of the bureaus were transformed into staff bureaus.

2.11.3.3.2 The Department of Environment and Natural Resources

DENR is a huge bureaucracy. Office of the Secretary, DENR is served by one Directorate (for integrated water resources management), a Special Concerns Office, Office of Head Executive Assistant, and Public Affairs Office. Two Authorities, two Boards and one Corporation reports to the Office of the Secretary. The Secretary is supported, in undertaking the mandate of DENR, by 5 Under Secretaries and 4 Assistant Secretaries having their own offices, who together manage 6 Bureaus, 7 Services, 4 Special Offices, 3 Support Groups, 15 RENROs, 74 PENROs, 170 CENROs, and 2 Regional Offices (see Figure 1).

Of the 6 Bureaus of DENR, three are directly relevant for forestry: the Forest Management Bureau; the Protected Areas and Wildlife Bureau; and the Ecosystem Research and Development Bureau.

It is claimed that forestry related and linked activities and aspects account for a much larger, share compared to other natural resources sectors under DENR, in terms of area covered (53%) and total of personnel employed (about 52%). However, several stakeholders expressed the view that sustainable forest management receives very little “real” attention and priority.

An important intention of EO 192 (1987) was to re-oriented the mission of DENR from traditional regulatory work to development assistance to the local people and forest-based industries through grass-roots, people-centered approach. The main goal was (within a reasonable period) to transform the DENR from a regulatory and controlling organization to a mainly extension organisation supportive of the development efforts of the people and the private sector, with greatly reduced regulatory functions. The actual management of production forests were to be carried out by a mix of private sector forest managers-operators (large-, medium- and smallholder lessees supported by NGOs). DENR will continue to manage protection forests, national parks and other protected areas, although some of these can be under management contract with POs, NGOs and LGUs. Interagency cooperation and coordination will also be improved to a stage which will allow for a holistic approach to upland development problems. The goal, however, is far from being achieved.

Forest Management Bureau

The Forest Management Bureau is one of the staff bureaus under the DENR. It serves as the doctrinal center of the Department on all matters pertaining to the management of the country’s forest lands, with the mission to: mainstream forestry back to the economy; revitalize the life support functions of forests; promote equal opportunities to the benefits of forests; and bring people in the forefront of forestry.

As specified in EO 192, it is the mandate of the FMB to advise the Secretary on matters pertaining to forest management, development, conservation and protection, and proper use of forest resources. The functions of the Bureau include the following:

- Formulate and recommend policies and/or programs for the effective protection, development, occupancy, management and conservation of forest lands and water sheds;
- Undertake policy studies on forest economics and forest-based industries, including supply and demand trends, and identifying investment problems and opportunities in various areas;
- Develop plans, programs, operating standards and administrative measures to promote the Bureau’s objectives and functions;
- Advice the regional offices in the implementation of the above policies/programs; and
• Assist in the monitoring and evaluation of forestry and watershed development to ensure efficiency and effectiveness.

FMB is headed by a Director who is backed up by an Assistant Director. It has seven (7) regular divisions namely: a) Reforestation Division; b) Natural Forest Management Division; c) Community Based Forest Management Division d) Forest Land Uses Division e) Forest Economics Division; f) Administrative Division; and g) Legal Division. There are three (3) Support Staff attached to the Office of the Director: a) Planning and Project Management Staff; b) Geographical Information System and c) Forestry Operations Center. An International and Special Concerns Group is also placed under the Office of the Director to handle all international commitments (see Figure 6).

It is understood that a DAO is underway for establishing a specific line of regulatory/functional authority for forestry, reporting to the Under Secretary for Operations; and that this may in due course lead to a line bureau for forestry.

Protected Areas and Wildlife Bureau

PAWB is responsible for formulating and recommending policies and programs for the establishment and management of an integrated protected areas system and the conservation of biological diversity. Apart from staff for planning, administration, legal and financial aspects the technical divisions under PAWB are: Bio-Diversity Management Division; PA's Community Management Division; Nature Recreation and Extension Division; Wildlife Resources Division; Ninoy Aquino Parks and Wildlife Nature Centre; and Hinulugang Taktak National Park.

Ecosystem Research and Development Bureau

ERDB, which absorbed the former Forest Research Institute and the National Mangrove Committee contains specialized units for under taking research programmes. ERDB has 6 technical divisions dealing with forest ecosystem research; grasslands and degraded areas ecosystem research; technology development; coastal zone and fresh water ecosystem research; upland farms ecosystem research; and Los Banos Experiment Station. ERDB is serviced by planning, management, legal and finance units.

2.11.3.3.3 Devolution of forestry functions to LGUs

There have been several initiatives after the 1986 election, with regard to democratic decentralization and devolution of authority to LGUs. The Local Government Code (RA 7140 of 1991) has granted LGUs greater fiscal and political autonomy, thereby expanding their capacity to participate in national development efforts. It has brought to the fore the critical role of LGUs in the management of forest and watersheds. In general, the Code has tasked LGUs to adopt measures that will “protect the environment and impose appropriate penalties for acts which endanger the environment”. More specifically, the Code gives responsibility to the appropriate levels of LGUs in providing their respective constituencies basic services and facilities, which include the protection of forest resources, among others. Rule V of the Implementing Rules and Regulations of the Code stipulates responsibilities: (a) Barangay level: services and facilities related to general hygiene and sanitation, beautification and solid waste collection; (b) Municipalities: subject to the supervision and control of DENR, the implementation of community-based forestry projects through the ISF, management and control of communal forests not exceeding 50 square kilometers and the establishment of tree parks and green belt and other similar forest development projects; and (c) Province: the enforcement of forestry laws limited to community based forestry projects. These provide the backbone for increased involvement of LGUs in the governance of natural resources in their respective jurisdictions. LGUs’ collaborative roles in forestry development have become very important because:

(i) all CBFM projects necessarily fall within the geographic jurisdiction of LGUs, thereby making LGU cooperation and support logical and vital;
DENR has already devolved some of its conservation, management, and protection functions to LGUs and reassigned some 1,000 staff members to capacitate local authorities. The Joint DENR/DILG Memorandum Circular 01 (of 1998) has spelled out the procedures for the LGUs’ execution of devolved forest management functions.

It was also planned that DENR will transfer budgets, assets, and records that correspond to the Department’s devolved functions and programmes; but there has been only limited progress in this. Many LGUs are attempting to defer the devolution, citing, inter alia, lack of clarity in defining the new responsibilities of local authorities, lack of financial capability, inadequate office space to accommodate new staff, and complexities in administrative arrangements.

LGU functionaries feel that in the spirit of decentralization they should have ‘real power’ to make important decisions relating to resources management. But the LGU code does not adequately provide it. Real power still remains at the centre. Forest and natural resources are optional areas for LGUs. As such, in most LGUs there is no forestry expertise or capability to deal with forestry matters. However, forest related issues often impinge on the life of the local people and their livelihood activities; but LGUs are in most cases unable to intervene. The view was expressed that, often, central government institutions handover burdensome tasks and low value resources to LGUs, and keep the attractive activities and resources for themselves. People’s Organisations also have similar problems. The CBFM committees and the National CBFM Federation are yet ineffective, paper bodies.

2.11.3.4 POs and NGOs

By administrative fiat, the collaboration between POs and NGOs has been set up for their mutual strengthening and capacity-building. Foremost among these fiats are:

(ii) RA 7160, amplified by its IRR, DAO 92-30, has transferred certain forestry development functions to LGUs for implementation;

(iii) LGUs’ closeness to the local people and proximity to the forest resources to be managed make them powerful partners of DENR in implementation of CBFM (SUSTEC, 2001).
• DAO 93-22 (1993) providing revised guidelines for CFP by specifying that local communities can participate in CFP and be granted long term tenures over their assigned areas only after they have organized themselves into a PO

• The same DAO 93-22 specified that “no CFP project shall be approved for implementation unless a competent and credible assisting organization (NGO) has signified its commitment to assist the project; and the recognized leaders in the community have accepted the NGO”.

According to SUSTEC (2001) the situation shows that existing policies designed to strengthen and support institutions are seemingly sufficient, and responsibility for less than satisfactory performance may lie in the institutions themselves rather than in the enabling policies that govern their functions.

POs, being newly established, have little experience with rigid structural frameworks and often rebel against regulated behaviour. Being inexperienced as “team players”, they often give up at the first sign of problems, resulting in frequent disintegration of POs and failure to achieve their objectives.

POs usually have sufficient members with potentials for CBFM project implementation. However, despite their experience in subsistence farming, they often lack skills that suit the new CBFM projects and, thus, could not be effective partners in implementation without proper training in community organizing, enterprise management, values formation, and agroforestry techniques.

NGOs have idealistic youthful members with training, usually up to the university level, but are generally deficient in CBFM field experience, particularly on the technical side of the project. Thus, they often encounter difficulties during the initial stages in providing technical assistance to POs that are implementing CBFM projects.

Some of the national NGOs involved in forestry in Philippines, among others, are Tanggol Kalikasan, Philippines Association for Inter Cultural Development (PAFID), HARIBON and environmental Science for Social Change.

2.11.3.3.5 Inter-sectoral and inter-agency co-ordination

Most officials confirmed that inter-sectoral / inter-agency cooperation is complicated due to considerable overlap of functions and responsibilities and jurisdictional uncertainties. There are multiplicity of agencies (Agriculture, Fishery, Mining, NCIP, BOI, NEDA etc.) linked to management and control of forest land, and financing of forestry activities. There are overlaps in the authority for deciding land claims, granting land rights, managing range lands and fishing grounds, managing of watershed areas, and controlling ancestral lands. Boundaries of responsibility are often left vague, with wide areas of inter-face; and, animosities develop in the name of turf-guarding.

Development activities also suffer because of disputes. There are protected areas within ancestral lands, all types of landuses in watersheds, and cultivation and encroachment in PAs. Forests are cleared for several “development” purposes (infrastructure development, settlement of displaced persons, establishment of parks and public amenities), but there are no joint efforts to manage such deforestation in a planned manner, e.g. through compensatory tree planting. These problems are to be addressed in a co-ordinated manner.

Agriculture and forestry are complementary to each other. Good forestry supports good agriculture and vice versa. But co-ordinated efforts to capture this complementarity hardly exists. There is no comprehensive and collaborative strategy between forestry and animal husbandry sectors for management of grazing and fodder production. Similarly, departments working on rural amenities are poorly linked to DENR offices and their plans are not developed in coordination. This situation needs improvement. Improvement is required not just at the top level, but also (and more so) at the field level, where the impact will be significant.

Substantial differences exist in the policy thrusts, priorities and approaches of DENR and LGUs relating to management and utilisation of forests; and that leads to weaknesses in DENR/LGU collaboration.
2.11.3.4 Weaknesses of Forestry Institutions

DENR, being a huge, decentralized (partially), national organization, is spread out over the entire country, with the national HQ at the apex and the lowest levels (CENROs) at the base of the structural triangle. Its huge size, its bureaucratic “through proper channel” style of communications, the limited powers delegated to lower echelons, and the widely scattered field units over the whole archipelago are such that:

- decisions at the top and implementation on the ground are often separated by considerable time lags;
- feedback from below about field activities reach HQ only after long time delays, thereby impeding quick managerial decisions;
- constant monitoring and evaluation (M&E) of project progress are extremely difficult to undertake.

Field staff suffer constraints and problems in conducting operations falling under the mandate of DENR, due to lack of necessary specific skills, resources and facilities. Since FMB is a staff bureau, contacts between DENR field staff and FMB are of indirect nature and not conducive for direct professional support. Responsibility for forestry is so diffused that one can easily point finger at another for dereliction. DENR does not have adequate staff in the field to service the needs of the forestry sector. Further, the field staff do not receive any special incentives for the arduous nature of the work of protecting and managing the forests. Low level of salary is a disincentive.

The integration of DENR activities at the field level, however, did not result in the integration of approaches to field concerns. Operations still continue along sectoral lines. Likewise, staff bureaus are not properly utilized. There are often local level conflicts of various nature between DENR functionaries and LGUs; some times with the technical and operational units within the same office. LGUs also feel that not enough decentralization has been made.

It may seem easier to manage LGUs because they are smaller and have shorter lines of communication. Decisions can be made, transmitted to lower staff, and implemented on the ground relatively quickly. However, their organisational structure is often rendered less effective by short-sighted “tinkering” by elected political leaders facing very short tenures of office. Furthermore, the organisation is often weakened by undue political interference in the placement of qualified people within the structural framework. Resources available to LGUs are also limited. Often, vested interests come to play, especially in matters such as boundary delineation, issue of permits and licenses etc. Decentralisation without adequate planning and preparation and resources cannot be effective (SUSTEC, 2001).

Devolution of functions and limited delegation of powers to the field offices of DENR, strictly does not amount to democratic decentralization. Democratic decentralization happens through empowering elected bodies and people’s organizations. There is also need to establish stronger partnership with POs and NGOs. Involvement of the private sector, the people and the community, in spite sympathetic statements in that regard is still far from adequate.

Weaknesses of the institutions related to forestry are further reflected in the following:

- The narrow skill base: The skills available are essentially related to general forestry and traditional silviculture. New skills required for forestry development, such as forest genetics, bio-chemistry, bio-technology, remote sensing, ethno-botany, NWFPs, economic planning, communication methodology, data management and marketing are astoundingly weak.

- The norms for human resource development and utilisation such as skill needs and training needs analysis, workload distribution, alternative career paths, incentive systems, vertical and horizontal mobility are hardly applied in personnel management.

- The Government agencies have a command structure, with only limited devolution of decision powers. An important factor which stifles initiative and effectiveness of an organization is lack of delegation of adequate power and authority. Previously, when a bureaucracy was small and activities limited, delegation of power was not a serious issue. There were hardly any delays; and
in emergencies use of discretion and a mechanism of automatic ratification were in vogue. As bureaucracies grow larger, delegation becomes key to efficiency.

- Multiple roles of agencies, structural rigidity, inflexibility of rules and regulations, lack of development orientation are factors adding to institutional weaknesses. These are often exacerbated by inadequate arrangements for inter-sectoral co-ordination, and in some cases inter-bureau (e.g. PAWB/FMB), inter-institutional (e.g. DENR and the independent ENR Office of the Muslim Region of Mindanao) and inter-regional conflicts.

An important principle of institutional development is that the policy decides (creates) the organizational structure required for its implementation. But a dangerous tendency is often seen where the organisation tend to formulate policies on ad hoc basis (and change them frequently) to suit its structure and interests. Moreover, the change of senior officials (down to the level of Assistant Director) with every change in administration results in loss of institutional memory leading to a continuous/repeating exercise of “inventing the wheel”.

Compared to most other countries of the world (and in the background of UNCED Forest Principles, and the UNCSD/IFF/UNFF highlighting the need for awareness about and priority for forestry and SFM), forestry sector and its role in Philippines is somewhat muted. A functionary designated exclusively in charge of forestry in the DENR is only at the 4th level; and it is furthermore submerged in the ENROs. Many (even insiders) tend to question the effectiveness of FMB in positively influencing SFM in the country.

2.11.3.5 Planning and Programming for Forestry

Plans are an important vehicle for implementing policies, through appropriate programmes and projects. Normally, long-term perspective plans develop a long term programme structure and targets to reflect the policy proposals. Implementation is based on medium term (4/5 years) and annual operational plans which represent time slices of the long term plan and provide operational details and strategies.

2.11.3.6 National Forestation Programme

In the past, Philippines had taken up several programs to control deforestation and to carry out afforestation/ reforestation, components and details of which kept changing. As a result, program objectives were not fully achieved. For example, the Integrated Social Forestry Program was launched by the Government in 1982, integrating some of the earlier programs. The Integrated Social Forestry Program aimed at providing sustainable living conditions for the forest inhabitants and occupants through participation in the process of conservation and redevelopment of forests. Components of this program was later merged into the National Forestation Program.

It was in 1986 that the government launched a 14-year (1987-2000) National Forestation Program (NFP). To implement the NFP, the Forestry Sector Program loan was approved and granted on June 28, 1988. Funds to support the program were provided by the loans from the Asian Development Bank (ADB) and the Overseas Economic Cooperation Fund (OECF), amounting to US$240 million. The Philippine Government provided regular appropriation equivalent to about US$43 million as counterpart fund. The FSP and a follow-up ADB loan had later to be reduced in size, considering the realities of the situation in the field and for other reasons.

2.11.3.7 Master Plan for Forestry Development

As part of ADB support to Philippines, and through an ADB/FINNIDA technical assistance, Master Plan for Forestry Development in Philippines was formulated in 1990, to support long-term SFM and to establish a comprehensive system of planning and implementation in the forestry sector. The MPFD was structured with 3 major programs, 15 programs and 51 sub-programs, and a time horizon of 25 years. The MPFD had targeted approximately one million hectares of residual logged-over forest for management under the Community Forestry Program over a period of 25 years. This program aimed to involve local
communities in the management of the forest resource and to encourage the large companies to focus more on processing of the products produced by the community projects.

The MPFD, which was launched with much fanfare was not properly implemented. The MPFD program structure was also not followed through. Programs and projects were implemented in an unstable sectoral and cross sectoral policy environment. Design errors led to implementation problems; and in many cases there were lack of site/site complementarity. Local level plans were not properly linked to the national level plan. Only a few local government units have developed and got approval for their Comprehensive Land Use Plans (CLUPs). And, only very few have knowledge on how to incorporate Forest Land Use Plans within such CLUPs.

Moreover, the DENR's 25 year Strategic Action Plan for CBFM (1995) became the master plan for implementing CBFM-related activities. Thus, the attempt to have a long term balanced programming approach as propounded in the MPFD did not strike root in Philippines.

A rational program structure for forestry development facilitates categorization of activities based on an appropriate common denominator, helps to analyse trends and monitor long term impacts, provides information (including of costs and benefits) for realistic planning and follow up, ensures continuity and supports SFM. By not properly implementing the MPFD, all these benefits are also lost.

The erstwhile ad hoc system of planning is being continued, under which the forestry plan (Annual Operational Plan) is absorbed into the DENR Annual Plan, which in effect is defined and decided by NEDA, within the Medium Term Development Plan, and based on resources available. MPFD obviously is not owned by NEDA.

There is no effective system of “managing” the implementation of forestry plans. Activities are undertaken at various levels (and also by different institutions) and it is difficult to get a total picture of all forestry activities. Projects (foreign-assisted and special) have separate staff / teams, generally, for the entire duration of the project. There is over-dependence on donor support for projects (often, projects are initiated by donors), and most of them are undertaken on an ad-hoc basis - not within the framework of a long-term plan. Therefore, there is also no consistent approach for forestry development. Post project maintenance is mostly neglected. This is particularly serious in respect of afforestation programmes, where survival and growth beyond the project period is important.

2.11.3.8 ENR Shell

Currently a new effort, supported by UNDP, is underway to prepare a framework (ENR Shell) for development of environment and natural resources, specifying vision, mission, objectives and programmes, and this exercise includes forestry as well. Since there are other similar / overlapping activities going on, several formulations of programme listing are available. One such listing of forestry activities / programmes is given below:

- Creation of economic opportunities and jobs
- Forest as source of water, food, medicine and shelter
- Global warming and climate change reduction
- Forests to care for the cultural and recreational valves
- Forests to protect and increase biodiversity
- Education and extension services
- Cross-cutting concerns

2.11.3.9 Planning Responsibility

Planning function in DENR is under the office of Under Secretary for Policy and Planning and is headed by the Director of Planning and Policy Studies Service, covering three board areas, i.e. policy studies, planning and economic affairs. The Service is composed of Divisions dealing with: policy and programming; project development and evaluation; policy formulation; policy review and analysis;
management information system; statistical coordination; environmental and natural resources economics. The structure tends to change with change of incumbents in the Service.

2.11.3.10 Mobilisation of Funds

An important strategy to implement a plan/programme is to mobilize the required funds. Depending on the circumstances, the sources can be several – public and private of both domestic and foreign origin (i.e. domestic public, domestic private, foreign public and foreign private).

Details are not readily available on funding by sources and activities. While logging and wood processing are essentially private sector activities, there is heavy dependence on foreign assistance (loans and grants) and on domestic public sources for forest resource development, community based activities, research and infrastructure development.

**Forest Revenue**

The main domestic public source of fund mobilization is the charges on timber and other products from forests. As per RA 7161 of 1991 charges shall be collected on each cubic meter of timber cut in forestland, at twenty-five percent (25%) of the actual FOB market price based on species and grading. In the case of pulpwood and matchwood cut in forest land, forest charges on each cubic meter shall be ten percent (10%) of the actual FOB market price.

These forest charges shall be applied to naturally growing timber, and forest products gathered within public forestlands, alienable and disposable lands and private lands. Planted trees and other forest products harvested from industrial tree plantations and private land covered by existing land titles or by approved land applications are exempted from payment of forest charges.

FOB market price survey is periodically done for the different species groups, separately for Luzon, Visayas and Mindanao. In the year 2000, the FOB market price for timber ranged from 950 pesos to 15,30 pesos per cum, depending on the species group and location. There is a general feeling that the rent collected as forest charges is low.

License fees for awarding rights to exploit/utilize forests are usually nominal amounts that do not reflect the land’s real rental value. This contributes to the under-valuation of forests and forestland.

There is an absence of mechanisms to effectively capture the large economic rents accruing not only from harvests of timber and other forest products but also from the benefits and use of other forest values, such as watershed values, forest amenities, recreation, bio-diversity, carbon sequestration and such other global externalities. The valuable externalities could be converted into tangible benefits if these benefits could be evaluated, and appropriate share of rent captured. Innovative mechanisms and concepts such as carbon credit, CDM and different forms of tradable instruments are still under discussion/consideration. Related to this is the absence of appropriate market-based instruments and incentives.

Collection of special charges (cess, surcharges, tax) to mobilize funds for targeted activities such as reforestation, research, extension and so on is a normal practice adopted in several countries. Philippines used to have a special timber cess to support the Extension Office of UPLB.

**Sources of Funding for Private Sector**

The main sources of funds for the corporate sector are profits/savings and loans (national and international). Governments also support medium and large private firms investing in forest-based activities through investment promotion packages and incentives. However, for the small investor lack of access to funds becomes a problem. Micro financing and revolving fund facilities are limited.

There are stipulations that banks in Philippines should target 40% of loans for rural development and agro-industries and that 10% should be small and medium scale loans, as specified by the Central Bank. But this is hardly ever followed. And, the country continues to be afflicted by poverty, even after 50 years of poverty alleviation efforts.

According to some bankers, there is scope for mobilizing resources for forestry development in Philippines, if supported through appropriate and stable policies, by channeling small savings of local communities, tapping Philippine foreign workers remittances, involving private sector in a big way, seeking
venture capital for innovative/scientific initiatives (e.g. bio-prospecting, bio-technology), and attracting green investors. A stable system of micro-finance and “Grameen-Bank-Type” micro-credit facilities can support CBFM and small-scale reforestation efforts. The system of Philippine Rural Banks may be relevant in this regard.

**Forest Resource Accounting**

There is serious distortion relating to forest’s contribution, in the national system of accounts. There is considerable amount of unrecorded production and use of timber, poles and fuel wood. Transactions relating to a number of NWFPs takes place outside the market. Others such as forest food, medicines, forest grazing and fodder, and eco-tourism benefits are credited to other sectors. And, no values are shown for global externalities. Thus, the real benefit and cost account of forests are not available, nor its asset value and net annual capital loss (or capital formation).

In view of the continuous deforestation and forest degradation, and the low level of investment in forestry, the situation in Philippines is one of annual net disinvestment or negative investment.

Development signifies net positive investment. Sustainability requires that formation of new capital equals the sum of rents from resource depletion and environmental damages. While investment refers to real capital formation, disinvestment signifies negative investment which can result from destruction or depletion of capital stock through capital consumption. Investment becomes real only where gross investment is greater than disinvestment resulting in a positive net investment. With respect to forestry, investment for sustainable development should be more than value of capital lost through deforestation or forest degradation. Deforestation, whether planned or unplanned, leading to destruction of forest capital is an evident case of disinvestment.

Several of the new concepts of forest valuation can help to enhance the importance of (and priority for) forestry. However, in spite of their usefulness, they are still only taking points in professional gatherings; and not part of action. For example, the need for natural resources accounting was being talked about, using arbitrary models, for over 15 years; but no action is seen taken to implement it, to the extent possible.

**Foreign Assisted Projects**

Philippines has been receiving substantial external assistance in the forestry sector. ODA is provided by a large number of donors – both multi lateral and bilateral, in the form of grants and loans. Major financial support came from multilateral donor agencies such as ADB, World Bank (WB), Global Environmental Facility (GEF) and the United Nations Development Programme (UNDP). Bilateral donor agencies from countries such as Japan (JBIC), United States (USAID), the European Community (EU), Germany (GTZ and Kfw), Canada (CIDA), Denmark (DANIDA) and Australia (AusAID) also made significant contributions. NGOs have also successfully tapped various donor sources and implemented forestry projects in the field (see Box. 4).

Of all the foreign assisted and special projects in the ENR field (area of interest of DENR), during 1978 to 1999, forestry related projects accounted for 30% (56 out of 193) in terms of number of projects and 70% in terms of foreign input of funds (US $ 503 million out of US $ 723 million).

Foreign assisted projects in forestry and natural resources management are implemented by DENR, other departments, special teams formed (on contract) for project implementation and NGOs. In some cases NGOs are awarded projects and funds directly by donor agencies – since the department concerned lacks counterpart funds and the NGOs are able to provide it (e.g. implementation of Northern Sierra Madre Natural Park Conservation Project through the NGO PLAN). How will this influence the sustainability of project impact is vague. Since the projects are of limited duration, co-ordination and involvement of the (mandated) departments are extremely important. How it is ensured, and how these projects fit into the large sectoral canvas is not clear.

While forestry projects and programs are highly donor-dependent, the quantum of ODA has been falling, of late. The quantum of foreign assistance received in the forestry sector of Philippines fell from US $ 346.1 million during the 10 year period 1980-1989 to US $ 154.7 million during 1990-1999. Table 2.42 shows the foreign assisted and special projects relevant to the forestry sector
Table 2.42. Foreign Assisted and Special Projects Relevant to the Forestry Sector

- Forestry Sector Project, 1993-2000, ADB
- Forestry Sector Project, 1993-2003, JBIC
- Natural Resources Management Programme – Low Income Upland Communities Project, ADB
- Regional Resources Management Project, WB/SECAL, World Bank
- Environmental and Natural Resources Sectoral Adjustment Loan Program (ENR-SECAL), 1991-1999, IBRD
- The Philippine Environmental Governance Project (EcoGov), USAID
- Debt Reduction for Tropical Forest Conservation Activities through Local NGOs. (TFCA), USA
- Preparatory Technical Assistance For Community Based Forest Resources Management Project, 2000, ADB
- ASEAN Regional Centre For Bio-Diversity Conservation (ARCBC), 1997-2004, EU
- National Integrated Protected Areas Programme (NiPAP), 1995-2000, EU
- Small Grants Programme for Operations to Promote Tropical Forests in Asia (Includes Philippines), EU/UNDP
- Philippine-German Community Forestry Project – Quirino, 1992-2001, GTZ/KfW
- Quirino Community Based Forestry Programme – A Debt For Nature Swap Initiative. 1998-2002: KfW
- Philippine-Canada Environmental and Economic Management Project (PCEEMP), 1998-2002, CIDA
- Conservation of Priority Protected Areas (CPPA), 1994-2001, GEF
- Forest Rehabilitation In Philippines (?), Finland
- Manpower Development, Australia
- Utilisation, Collection and Trade of Tropical Non-Wood Products in Philippines, ITTO
- Market Research and Market Information on NWFPs in Philippines, ITTO
- Developing Tropical Forest Resources through Community Based Forest Management, ITTO
- Development and Implementation of the Pilot Project on Information System, ITTO
- ENR Framework; UNDP
- MPFD Revision, UNDP
- The Philippine Model Forest Approach for SFM, FAO
- National Forest Resources Assessment in the Philippines, FAO
- Development of Sohoton Natural Bridge National Park as an Ecological Destination, 1999-2000 (Special Project).
- Establishment, Protection and Maintenance of 24 ha of Organic Agro-Forestry Farm in Sloping Lands, 2000-2004 (Special Project).
- Ancestral Domain Management Program (Special Project).
- Bukidnon Forests Inc, Malay Balay, Bukidnon, Mindanao, New Zealand.

Conditionalities for ODA is getting tighter. Grant’s share of ODA is further declining, and is given mostly for small, pilot demonstration projects, specific aspects of capacity building, policy revisions etc. Donors have been repeating that for financing national programs, funds are to be mobilized domestically, from private and public sources, and ODA (particularly grant funds) has to be used as a catalyst.
It has been observed that there is inadequate co-ordination among donors in channeling ODA for programs/projects in the various sectors. But the initiative and insistence for such co-ordination is to come from National Government thru NEDA. Often national/sectoral agencies independently exert pressure on donors for funds, and this can lead to skewed development.

In Philippine forestry, plan implementation is largely based on availability of donor funding, and not according to plan priority or sequence. How can this be rationalized within a coordinated framework, to ensure balanced development is a vexing issue. ADB (2000) has observed that in Philippines, MPFD was not followed up with a corresponding operational implementation plan, so it is merely a piece of paper, even though it has been approved by the President.

Implementation of forestry projects often ends up ineffective without achieving the objectives, due to lack of long-term funding commitment. In the absence of any review and evaluation, to quote from a report, “there has been cases where a project has been followed up, after a lapse of time by a rehabilitation project because of lack of management or maintenance after the initial project phase.”

Apart from the mix of bad policies, lack of continuity of policy from one Government to another (causing a lack of long-term vision and loss of good initiatives) is a matter of concern. This break in continuity causes uncertainties and delays in programme / project implementation. And, ‘after foreign-assisted project expires, what?’ is another vexing issue. Impact of a good project gets lost, if not properly followed up.

Also, projects fail due to lack of counterpart funds, lack of community involvement, frequent change of staff and other reasons. Often, donors get wary, and wait for policy rationalization.

2.11.3.11 Problems and constraints in forestry planning

In the area of planning, programming and budgeting (including fund mobilization), paths of development planning in forestry does not serve public interest, as an analysis done for “ENR Shell” shows. Related problems and constraints among others, are the following:

- Adequate knowledge base for effective and efficient forestry planning and management of projects is lacking.
- Haphazard programming, and frequent changes in programme design, is not conducive to obtain stakeholder’s interest and commitment for SFM.
- Decisions and recommendations of projects are often ignored or implementation inordinately delayed. A 1948 decision for boundary demarcation between Aurora and Quirino is not yet on the ground.
- While the foreign assisted projects have crucial components for supporting SFM such as inventory, mapping, boundary delineation, institutional strengthening etc., etc., there are hardly any arrangements to carry them forward, beyond the project period.
- There is also lack of donor co-ordination and distortion of project priorities caused due to donor preferences.
- While concentrating on the “visible” aspects of programmes (e.g. CBFM), the important support activities such as R&D, human resource development and extension are often ignored.
- Weaknesses of forest revenue system and need to strengthen rent-capturing capability.

2.11.4 Human Resource Situation in the Forestry Sector

All those who are engaged, full time or part time, in forestry related activities are part of the human resource of the sector. No statistical information is available on the overall human resources situation in the sector covering public and private sectors, educational and research institutions, trading establishments, consultants and service providers and small scale forestry operators. Whatever information there is, is about
2.11.4.1 Personnel Situation in DENR

As of June 2002, the manpower complement of personnel was 23,371 composed of permanent, temporary, co-terminus, casual and contractual categories. 1,544 positions were unfilled, making up a total approved strength of 24,915.

The distribution of approved staff strength of 24,915 was: field staff: 20,257, headquarters: 4,658. By function, the distribution was as follows:

- Administration: 7,148
- Research: 800
- Environment and PA: 1,872
- Forest Management: 9,214
- Lands Management: 4,846
- Mines Management: 1,035

Of the complement of staff in position (23,371) the number of males were 14,509 (62%) and females 8,862 (37%). At the DENR headquarters the ratio of male and female staff is 49:51.

Staff employed in Forestry Activities

The distribution of approved staff strength of 9,214 in forest management as in June 2002 was: field staff: 8,899 and FMB/HQ staff: 315. Some 2,000 persons had training as foresters; of whom close to 50% are females.

In FMB the number of posts filled, comprising all categories was 267 of whom 122 (46%) were males and 145 (54%) females.

The educational attainment of the FMB staff excluding the contractual staff (267-19=248) were: Ph.D 5; Masters Degree 24; Masteral Units 47; College Graduate 114; College Under Graduate 39; High School Graduate 16; High School Under Graduate 1 and Elementary School Graduate 2. Of the total posts filled, some 140 are technical staff and the rest administrative support staff.

35 persons out of the 248 had more than 30 years of service; 96 persons between 21 and 30 years of service; 104 persons between 11 and 20 years and 13 persons below 10 years of service. Only one person was recruited during the last 5 years. By age categories: 17 persons are above 60 years of age; 51 persons between 51 and 60 years; 110 persons between 41 and 50 years; 66 persons between 31 and 40 years; and only 4 persons between 21 and 30 years.

HRM Service of DENR

The Human Resources Management Service is under the Office of the Assistant Secretary for Finance and Management Services. HRMS is headed by a Director, with a mandate to provide direction in major DENR-wide human resource development activities and supervision of all HRMS functions. In that regard the Director, HRMS is supported by four Divisions: Career Management; Management Development; Training Development; and ENR Academy. There are also HRD Chiefs attached to RENROs in the regions.

HRMS undertakes: training programmes (e.g. CBFM, ENR Laws, Revenue Management etc); fellowship programmes; and foreign and local scholarships. Other activities include manpower research (e.g: job satisfaction survey, life after training) and manpower profiling.

HRMS is badly constrained by lack of adequate funding, manpower and facilities. Therefore, it has not been possible to undertake workload and skill need analysis, studies on impact of incentives, vertical and horizontal mobility, career ladder etc. Low salary level in Philippines is considered as a major disincentive.
2.11.4.2 Education and Training

There are 47 forestry schools and 9 Regional Forestry Training Centres in the country. In fact, there has been a proliferation of forestry schools with 19 new schools added between 1990 and 2000. The MPFD had recommended rationalization and reduction of the number of schools to 14. On the other hand, against the recommendation to establish 70 provincial training centers, none has been established.

The quality of forestry education remains low and curricula is not appropriate to the current needs. Training needs of DENR, LGUs and POs are not adequately catered to. There is need for more refresher/upgrading training for the regular staff of DENR. Capacitation of LOs, Communities (Village Foresters) and LGUs call for urgent attention. Deficiencies/inadequacies have been noted in educational facilities, faculty development, incentive system, skill needs assessment etc. The need for curriculum review and revision in forestry education/training institutions, appropriate to the changing needs in the sector and related tasks (e.g. NWFP development, enterprise management, bio-diversity conservation, CBFM, information dissemination) is equally urgent. For more on the situation of human resource in forestry please see Dolom (2003).

2.11.4.3 Association of Professional Foresters

Society of Filipino Foresters (SFF) is a registered association established to promote high standards of professional integrity and commitment. So long as the public agencies and educational institutions were the main employers of forestry professionals, the overseeing role of the association was limited. With the increasing involvement of private sector, community institutions and business establishments in forestry development, SFF will have to ensure that professional ethics and integrity are not compromised.

2.11.4.4 Other Concerns

Some important concerns in the area of human resource development in forestry are these:

- At all levels, for the forestry sector as a whole, there is no system of human resource planning and management covering evaluation of tasks, workload analysis, job description, design of career path, upgrading of skills, work atmosphere, incentives, and so on; and, there is universal need for capacity building.
- For routine/regular forestry activities, availability of skills and other resources at all levels is not consistent with the needs.
- Lack of an efficient data/information system with facilities for updating and retrieval is another one among several deficiencies.
- Low salary is a serious disincentive in establishing transparency and accountability.
- There is need for attitudinal enhancement, improving efficiency, increasing commitment and creating real awareness in the field of forestry.
- There is need to revamp the curricula for forestry education and training to meet the current concerns relating to nature conservation, eco-system management, management of NWFPs and forest based services, community empowerment and so on.

2.11.5 Forestry Research

Forestry is a scientific discipline and a profession, Continuous and sustainable development of forestry would depend on research inputs in crucial areas, solving problems and expanding horizons of knowledge

In the early part of this century, forestry research concentrated on botany, taxonomy, phenology, silviculture, logging and wood utilization. Some of the publications based on this early research, are still the authoritative sources of information available in these fields.
Scope of forestry research covers not only biological and technological aspects (forestry, forest products, conservation, wildlife), but also the wider spectrum of economic research, sociological research and policy research.

Research on all aspects of forestry (scientific, technological, economic, social environmental, and institutional) is an essential need to keep dynamism of the sector and to support development. Research and technology are prime forces helping to expand the development horizon. New research breakthroughs help to positively alter the outlook of the sector.

Ecosystems Research and Development Bureau (under DENR), Forest Products Research and Development Institute (under the Department of Science and Technology), Forest Development Centre (in the UPLB College of Forestry and Natural Resources), and Institute for Small Scale Industries (in the University of the Philippines in Diliman) are some of the institutions conducting R & D activities related to forestry. Institutions under PCARRD also carries out research in agro-forestry, ASEAN Regional Centre for Bio-diversity Conservation located in Laguna also is conducting research projects in Philippines. The mission of these institutions highlights the importance of R & D in solving the crippling problems in their respective areas of research.

2.11.5.1 Eco-systems Research and Development Bureau

Under Executive Order 192, the ERDB was created primarily to “formulate and recommend an integrated research program relating to Philippine ecosystems and natural resources as holistic and interdisciplinary fields of inquiry”. The scope of the ERDB’s mandates covers the following:

- Formulates and recommends an integrated research and development program relating to Philippine ecosystems and natural resources such as minerals, lands, forests, as holistic and interdisciplinary fields of inquiry.
- Assists the Secretary, DENR in determining a system of priorities for the allocation of resources to various technological research programs of the department;
- Provides technical assistance in the regional implementation and monitoring of the aforementioned research programs;
- Generates technologies and provides scientific assistance in the research and development of technologies relevant to the sustainable uses of Philippine ecosystems and natural resources; and
- Assists the Secretary in the evaluation of the effectiveness of the implementation of the integrated research program.

While the ERDB is attached to the DENR, it also works closely with the Philippine Council for Agriculture, Forestry and Natural Resources Research and Development (PCARRD). Principally, PCARRD provides oversight functions for all research activities and institutions in the agriculture, forestry and natural resources sector. To serve as guide for its research thrust and directions, every five years ERDB updates the ENR Research and Development Framework, which subsequently serves as an input to the Medium Term Development Plan.

The Environment and Natural Resources Research and Development Framework 1997-2001 of ERDB has divided its current research activities into five Ecosystems R & D Framework, namely:

- Forest Ecosystem R & D Framework
- Upland Farms Ecosystem R & D Framework
- Grassland and Degraded Areas Ecosystem R & D Framework
- Coastal Zone and Freshwater Ecosystem R & D Framework
- Urban Ecosystem R & D Framework

In addition, there is a programme on technology transfer and human resources needs. Interestingly the R & D framework of ERDB does not recognize the existence of MPFD. Given the scope of the R & D agenda, ERDB also collaborates with the Protected Areas and Wildlife Bureau (PAWB), and the Forest
Management Bureau (FMB) in the conduct of its researches. The two other Bureaus have also some research functions pertaining to their respective jurisdictions and close linkage is necessary.

2.11.5.2 Forest Products Research and Development Institute

FPRDI located in College, Laguna is under the Department of Science and Technology (DOST). The scope of FPRDI covers use of wood in housing and construction, wood and rattan furniture and handicrafts, chemical products from forests, and pulp and paper. Some of the current research activities of FPRDI are: stress grading of timber, codes and standards, bamboo utilization, hand made paper, utilization of NWFPs and improved tools and techniques.

2.11.5.3 Forest Development Center

FDC was established at the College of Forestry and Natural Resources, UPLB in 1978 by virtue of PD 1559 and became operational in 1981. The mandate of FDC is to conduct basic policy research and develop (or help develop) an effective machinery for forest policy formulation and implementation. The Center conducts consultations and workshops on major forestry and environment policy issues of national significance. It sponsored and spearheaded several stakeholders discussions on watershed management the results of which led to the recognition of the WEM approach to landuse planning and management of forest resources.

2.11.5.4 Institute for Small Scale Industries of the UP

ISSI essentially serves small scale enterprises through providing management courses, industrial extension, entrepreneurship support, community-based enterprises, customized programmes development, micro enterprises for upland farmers and so on. The Small Enterprises Research and Development Foundation Inc works in collaboration with ISSI.

2.11.5.5 ASEAN Institute of Bio-diversity Conservation

The Regional Institute based in Los Banos conducts studies in ASEAN countries (including Philippines), among others, on bio-loss in land fragmentation process, habitat restoration, fire prone trees in plantations, heritage parks and a host of other relevant topics.

2.11.5.6 Others

Some universities, NGOs and private companies also conduct research relevant for forestry development.

2.11.5.7 R & D Constraints

Forestry research in Philippines is constrained by several factors:

- Research activities of most research outfits are hampered by lack of funds, facilities and adequate number of trained scientific personnel, particularly those trained in research methodology.
- In many cases the research endeavours are multi – and inter-disciplinary concerns, and the challenge is to bring together the key players to work together towards a common goal. It is also difficult to get the willing support and collaboration of field staff.
- Research projects are not favourites of donor community.
- Forestry research agenda does not adequately address the needs, concerns and priorities of the rural and upland communities relating to mixed framing, agro-forestry and product marketing. There is need to bring R&D to targeted communities.
- There has hardly been any significant break-throughs in forestry research, for the last several years, to support SFM.
Forestry research lack client participation in problem identification, task orientation, participatory field research and adequate linkage with extension.

There is often, lack of incentives for researches – not only financial, but also lack of recognition, isolation, indifference of practicing foresters to the work of researches and administrative hassles to obtain approval and resources.

Even where there are worthwhile research outputs and related publications, there is little evidence of R&D filtering down to users – either due to disinterest or lack of dissemination.

The research activities of the two prime forestry-related research institutions in the country, ERDB and FPRDI particularly are plagued by several problems: lack of funds (with no timber cess targeted for research) and research facilities; lack of priority because of the long-term nature of research; lack of clear and adequate linkage with field agencies and extension; inadequate participation of (and coordination with) clients/practitioners; lack of a long term research master plan identifying resources and assigning responsibilities; bureaucratization of research; lack of inter-institutional linkages and duplication of efforts; lack of adequate problem analysis leading to irrelevancy/inadequacy of research and so on. Even the interesting research findings are, often, not translated into implementable technology. Adaptive research and instrumentation, often, are a missing link in relating research to real life situation. There should be greater complementarity of the research and development activities of these two institutions since one delves with the production of forest product while the other concentrates on the utilization of these products. This complementarity seems to be lacking.

2.11.5.6 Forestry Extension

The purpose of extension, is to extend, reach out or spread knowledge, technology and benefits to rural communities. Depending on circumstances, extension as a vehicle of rural development can involve: information dissemination; technology transfer (linking lab to land); packaging research results into implementable systems; delivery of inputs (seeds, seedlings, fertilizer); provision of advice regarding marketing and price information. A national forestry extension programme normally covers: forest protection; land and water conservation, agro-forestry, rationalization of shifting cultivation, greening campaigns, and forestry information. Since an important target of forestry extension is to expand tree planting, information being sought by farmers would cover a broad range – choice of species, information on best species, their uses, how to plant and nurture, possible inter crops, expected yields, marketing options, potential for value adding and so on. This would require backup research for different agro-ecological zones. Along with technology transfer, communication and conflict resolution are important aspects of extension. Involvement of media networks, exhibitions, competitions and other promotional activities can assist in making extension more effective.

2.11.5.6.1 Some constraints

Overall, in Philippines the system of information, extension and communication in the forestry sector is weak. Some of the major constraints in developing a system of forest extension which benefits farmers and homestead owners arise from the fact that: the extension workers have inadequate knowledge of agro-forestry systems in different ecological zones; the forestry personnel often lack knowledge of indigenous technology and farming systems and field staff lack motivation. The resources needed for support services and, in particular, the provision of incentives are always inadequate. There is a dearth of locally produced publicity, motivational and training materials including audio-visual aids and software; and small land holders look for an extension worker who recognizes their operational scale and particular crop needs. Lack of women extension workers and change-agents, inadequate involvement of NGOs, lack of coordination at various levels of research and extension, conflicting roles of field functionaries (policing vs. extension), and lack of a forest information system to support forestry extension are other constraints in forestry extension.
If we are to move into an era of meaningful people’s participation in forestry, there is an imperative need to develop a strong forestry extension system supported by strong delivery and receiving mechanisms and logistics. It is necessary to establish a system for coordinating the training and extension activities of different forestry sub-sectors with emphasis focused on the capacitation of communities and LGUs.

2.11.5.7 Monitoring and Evaluation

Monitoring and evaluation (M&E) are two closely linked steps of an activity or process meant to promote accountability for achieving expected results form a policy, plan, programme, project or activity. Monitoring and evaluation should be carried out at all these levels as a continuous process, for providing correctional measures. Making policies and failing to act on them is a serious default, and can have a negative impact on the entire policy field. At the activity level, performance evaluation can identify inadequacies. There are instances where performance evaluation has clearly identified management inefficiency and financial loss.

Performance audits, M&E and periodical assessments are an essential aspect of post-planning process to check on the adherence to the plan, to identify difficulties encountered and to make necessary corrective measures or modifications.

Even well prepared plans often go wrong due to lack of necessary co-ordination (vertical and horizontal), causing weak links or even broken links, resulting in poor performance and often, negative results. Active co-ordination at, and between, various levels – international, national and local, involving funding sources, technical assistance agencies, trade and marketing institutions, planning and administrative bodies, private enterprises, NGOs, local organizations and community representatives is an essential part of plan implementation process, involving M&E.

A clear set of criteria and indicators for the different types of forests/forestry and systems of management can serve as very useful tools for conducting M&E.

2.11.6 Summary of Institutional Situation

The forestry related policy and institutions/instruments in Philippines have not been stable, characterized by frequent changes. What is written as policy is meant to be practiced; and policies are to be changed only for very valid reasons. Moreover, policy, for a common person, is what is practiced, not what is written on a paper. If policies as written are not practiced, then by reflection what is practiced becomes policy. That is how in many situations/ countries the “real” policy is one of tolerating illegal activities and corruption, not in forestry alone, but in most sectors.

Therefore, there is no point in saying that “the policies are good, but the problem is in poor implementation”. Institutional efficiency is in practicing what is preached.

Organisational structure and mission, legal instruments (rules and regulations) and plans and programmes are strategic elements in implementing a policy. When these elements fail to achieve the policy objectives, the clear indications, often, are that these strategic elements need changes (modification, re-orientation or replacement). There may also be the need to change, clarify and/or re-iterate the policies. That seems to be the situation, now in the Philippines.

It is not the dearth of statements of vision, mission, principles and objectives which have led to the present situation of forest loss and degraded eco-systems; it is their non-observance and lack of commitment to them. The questions before us are several. If institutions have a clear mission in which all believes, how does conflicts arise? Do they offer scope for hidden agenda? If forestry is as important as is claimed, why is it that it gets so little attention? What kind of institutions and incentives will help ensure stability/progress of forestry in Philippines? What role is to be played by FMB/DENR and how that role can be made effective?

As stated in an ADB Policy document, there is a clear distinction between functions that only governments should and can perform as the “forest authority” (including policy and strategic planning,
creating an appropriate regulatory framework, and monitoring sector performance), and those where
government involvement is not essential, and may even be counter-productive, such as day-to-day forest
management. The principal role of Government in forestry should be the development of forest policy that
provides medium to long term vision for the sector, in which poverty reduction, social development and
environmental protection are well integrated taking into account the funding required and other incentives
necessary to ensure implementation of such policy.

It is necessary to acknowledge the desirability of a more pronounced role for the private sector and
community in resource mobilization, and their investments in the forest sector, and to address sources of
conflict between stakeholders over issues such as rights to land, and access to resources. Thus far, there
has been insufficient availability of reliable information necessary to improve transparency, and enable
stakeholders to participate in constructive dialogue (ADB 2002b).

All these call for a capacity building of a different nature, requiring attitudinal adjustments and
bureaucratic re-orientation.

2.11.7 Policy and Institutional Problems, Constraints and Issues

• Inadequate Awareness On The Sector

Forestry is perceived by many as marginal activity and often misinterpreted as wood production. Only the value of wood (timber and fuelwood) is considered in comparing the value of forest land against the possible agriculture output from it. The multiple roles of trees and forests in: alleviating problems like food insecurity, environmental degradation, and rural energy crises and unemployment; mitigating climatic changes; serving as carbon sink; supporting nutritional well-being; maintaining the integrity of watersheds; providing such essential products as herbal medicines, essential oils, phytochemicals, gums, resins, oils, dyes and colorants are not often understood. As a result of low awareness, policy reforms in the forestry sector have been slow, often lagging behind reforms of national macro-policies. Forest policies lack transparency and a progressive approach for development, involving people. Forest policies in most cases are general statements of intentions without clear imperatives and quantified objectives; nor are they properly formed, articulated and formulated through legislative processes – unlike major national economic policies. In the absence of clear objectives, important distortions derive from differences that exist between public and private perspectives on forest products.

• Inadequacies of Forestry Sector Policies
  o Lack of a comprehensive, balanced and legislated policy covering the entire forestry sector.
  o Lack of a comprehensive landuse and classification policy, and its influence of forestry and forest policies.
  o Policy weaknesses in forestry, ranging from gaps, irrelevancies, inappropriateness and difficulty to implement.
  o Frequent and arbitrary changes of policies, (with every change of government), mostly made at the DENR level.
  o Conflicts with policies of other related sectors.
  o Impractical nature of some policy provisions (e.g. 18% slope criterion for distinguishing A & D and forest lands).
  o Vagueness and unclear nature of some policy components (their objectives, strategies) leading to confusions and distortions.
  o Inconsistencies among some of the sectoral policies (e.g. production sharing for FLMA and no mention of production sharing in CBFMA).
  o Changing priorities and/or neglect of policy provisions.
  o Inadequate institutional and political commitment to implement important policies relating to SFM.
**Inadequacies of Legal Instruments**

- Non-implementation of several DAOs, e.g. DAO 23 of 92 regarding implementation of MPFD.
- Flaws in the legal basis for tenurial instruments such as defective inventory reports, provision for automatic conversion of TLA into IFMA, lack of uniform guidelines regarding government share, bank loans etc.
- Conflicts regarding bureaucratic jurisdictions, e.g. of DENR and Agriculture Department on grazing land.
- Inhibitory nature of several regulations e.g. those relating to removal of timber from private land, and those affecting the proper management of proclaimed water sheds.
- Proliferation of IRRs and other legal instruments, some of them ambiguous and contradictory, such that it is difficult to know what is legal or otherwise. And, many rules tend to have holes.
- Need for a working code with current/updated laws, rules and regulations easily accessible to all interested persons.
- Internal inconsistencies found in certain laws, rules and regulations.
- Long/frustrating procedures for legal compliance, opening up avenues for ‘speed money’ and corruption.

**Weaknesses of Organisational Structure of PFA**

- Vague and unclear mission.
- Lack of adequate financial resources, facilities and competent manpower.
- Bureaucratic inertia; inadequate incentives (poor salary ?) and recognition.
- Administration based on expediency not efficiency; administration by regulation and bureaucratic orientation of command and control.
- Instances (increasing?) of dishonest practices of bribery and corruption.
- Inadequate ability to organize and manage developmental action.
- Weak capability, particularly in specialized areas (e.g. planning, NWFPs) and interface areas with other sectors.
- Functionaries do not have the appropriate mobility and ability for communication.
- Week coordination and collaboration with institutions of other related sectors, and inter-organizational conflicts.
- Organizations are perceived as creations of policies (for policy implementation); but policies and policy thrusts are, often, moulded by the organizations to suit their orientation.
- Conflicting functions of PFA/DENR – i.e authority function to enforce laws, rules and regulations, and development/enterprise function for enabling/facilitating establishment of forestry enterprises, people’s involvement, private sector participation and environmental initiatives.
- Loss of institutional memory (and experience) due to changes in the top five levels of the Philippine Civil Service right down to the level of Assistant Director, in about every 5 years.
- Lack of coordination among different Bureaus of DENR and different divisions /units within Bureaus; lack of cooperation between field staff and HQ staff.; lack of (or inadequate) DENR-LGU partnerships; overlapping (and unclear) jurisdictions; lack of adequate mechanisms to ensure institutional effectiveness.

**Funding Uncertainties**

- Inadequate allocation of public funds through national bureaucratic mechanism; over dependence on donor assistance.
- Delays in fund allocation from Government sources.
- Weaknesses in fund mobilization from domestic and external sources.
- Lack of adequate enthusiasm on the part of private sector to invest in forest resource development, due to unstable policy environment.
- Adequate information nor forthcoming to satisfy the private institutional investors.
- Inability to adequately involve the national banks, particularly the rural banks, to finance forestry development.
• Lack of micro-credit facilities.

• **Hurdles for Private Sector Participation**
  
  o Stiffing rules and regulations and procedures.
  o Land tenure uncertainties.
  o Long gestation period of forestry enterprises; consideration of time preference.
  o Prevalence of illegal operations which make it difficult for honest entrepreneurs to survive.
  o Policy on CBFM tends to discriminate against (rather than enabling meaningful) collaboration of communities with private enterprises.
3.0 SCENARIOS FOR THE SECTOR

3.1 The New Outlook

The new outlook for the forestry sector can be a combination of several outlooks as follows: landuse, productivity, demand, supply, human resource, policy and institutional changes that encompasses the different aspects of the sector. Past trends and current situation provide material for outlook studies relating to different subsectors of forestry.

Typically, outlook for forestry is based on a series of projections. For example, future production of goods and services can be estimated, based on projections of several interacting elements of forestry such as forestland (area), technology/productivity, human resources, demand/consumption pattern and others. Each of these, in turn, depends on influencing factors, such as income, price and related elasticities, availability of substitutes, competing demand, efficiency levels in production, processing and use. Projections, as a planning tool are normally based on information about past trends, or potential outcome of different policy interventions.

Projections are extrapolations in space and time. Projections of future situations are useful and necessary to provide a basis and guidance for planning and setting targets. Projections are based on knowledge about the past and assumptions about influencing factors and functional relationships. Projections assume continuity of trends, which is not always true and realistic. Projections can vary in their nature, complexity and scope based on different and alternative assumptions. Projections can provide a range of potential situations that are likely to be encountered with positive or negative implications or impacts.

Outlook is what is seen as a prospect, in the future. It can be expressed both in qualitative and quantitative terms or as a combination of these. When we talk about the forest area outlook, we mean both its extent and health/quality; and the outlook of forestry often means the level of assumed technology, relative importance etc.

An important aspect of outlook analysis in forestry is supply-demand balancing. Policies relating to several factors influence both demand and supply. If information and other data are available, it should be possible to make adequate projections of future supply and demand. But apart from deficiencies in data available, much remains to be learned about factors which influence people’s use and dependence on forest products. In view of this, it has not been possible to make realistic projections. However, it is necessary to indicate the range of values to be used for developing growth goals. In respect of wood supply-demand balancing, since supply sources will undergo considerable changes, supplies should increasingly be obtained from high-yielding forest plantations, village forests and agro-forestry plots. The natural high forest will then be conserved for their environmental/ecological values.

Demand, by definition, means the desire for a particular good or service supported by the means to purchase it. Demand for forest products at the national level is influenced by several factors such as: population, disposable income, literacy rate, price of the product, price of substitutes and complementary goods, and credit terms. Elasticity of demand for a product is based on income and price changes and depends on the nature and characteristics of the product.

3.2 The Integrated Wood Balance Model

A substudy on the integrated wood balance model was conducted primarily to augment outlook analysis. A complementary effort was also made under the section on forest-based industries (Section 2.10) basically to analyze demand of wood and other raw materials by the housing and furniture industry.
3.2.1 Background

Between the periods 1960 to early 80s, the forestry industry in the country was a very viable and progressive industry. Timber production businesses were very vigorous while log production was booming. 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. This accounted for almost 10 % of the country’s total export earnings. The country’s log export was buffered 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 while establishment of new plants are not rationalized. These results 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 lack of raw wood materials was triggered by many factors. Primarily, the reduction of logging concessionaires from almost 400 licensees in the early 1970’s to merely sixteen at present took its toll on wood supply. The lack of appropriate management systems that could have taken over many expired and cancelled timber license areas saw the expansion of open access areas that resulted in rapid destruction of many residual dipterocarp forests. A study conducted by the Fernandez, et. al. (1987) showed that rate of forest destruction was enhanced in areas where logging operations stopped resulting to subsequent pull out of private forest managers as compared to the periods when the TLAs were still operating. This was primarily due to the uncontrolled take over of many upland farmers including displaced company workers over cancelled or expired concession areas.

Another factor that contributed to the decline of raw material supply from the forests was the policy shift in the utilization and disposition of forest resources. The provision under the 1987 Philippine Constitution where exploration and utilization of natural resources by private entities can only be allowed under joint venture, co-production and production sharing agreement with the government, practically prohibited the renewal of timber licenses. Cutting from virgin forests has been banned since 1992 (through NIPAS Act or RA 7586 & DAO 02, 1992). Furthermore, many timber concessionaires operating in secondary forests were cancelled or suspended in the early 90s in view of emerging environmental problems allegedly caused by logging. The Integrated Forest Management Program (IFMP) which is supposed to promote forest industrialization and creation of employment opportunities and boost sustainable wood production is still hampered by many operational problems.

Meanwhile the demand for wood products continues to soar. The lack of legal supply prompted significant importation of logs and other wood products beginning the mid 1990s. Product substitution using coconut lumber became attractive to the detriment of coconut industry. Timber poaching from the natural forests became lucrative. Woods from private tree plantations (both from public and private lands) were able to fill up significant part of the demand. However, the inadequacy of locally-produced industrial timber continued to exacerbate while upland population exerting pressure on forest resources continued to soar. At present, approximately 3.8 million hectares of forest lands are considered under open access situation.
The Master Plan for Forestry Development in the Philippines (MPFD, 1990) projected that the demand for wood products would steadily grow by an average of 5 percent every year until the Year 2015. However, the potential sources of timber would steadily decline for three reasons. First, the gradual phase-out/non-renewal of expiring timber license agreements (TLAs) resulting to much decreased supply of timber from natural forests. Second, the supply of coconut lumber would drastically decrease due to protection efforts being instituted by the coconut industry, and the fact that there is hardly any old stand of coconuts to harvest by the year 2005. Finally, other exporting countries are now restricting exports of logs. Indonesia for example has already banned its log export from its natural forests.

These scenarios converge to an impending and serious wood shortage by the year 2005 and onwards. Due to current economic difficulties sweeping the country, and as the government continue to incur budget deficits, it is foreseen that public investments in forestry would be harder to come by. Hence, private investments in forestry would play a critical role in the rebound of forestry in the country. It is also urgent that the government and the private sector anticipate this problem to come up with early solutions.

This study on the Philippine wood balance situations primarily aims to evaluate the opportunities that our forest resources can offer in view of the divergent concerns of many stakeholders regarding utilization of forest resources. It explores the enabling conditions by which the country could benefit from its resources without endangering the fragile forest environment which also provides other benefits aside from timber. This model does not set targets to be pursued the sector in the future but is meant to be used as a guide by the government and the forestry sector as a whole in evaluating impacts of different forest landuse decisions and resource utilization directions to future wood supply situations.

3.2.2 Objectives

The general objective of the study is to analyze the trends in wood balance situations in the Philippines under different policy situations and strategic land use assumptions in support of the assessment and revision of the 1990 MPFD. The specific objectives are:

• to develop a framework describing the wood production and utilization trends in the country;
• to assess the wood resource base and potential wood supply of the country;
• to evaluate the demand of wood in the country under the past, current and future conditions;
• to evaluate potential sustainable supply of wood;
• to use the model as a decision support tool for analyzing the wood balance situation in the Philippines and continually improve supply and demand projections as accurate data come along;
• to recommend policy adjustments relative to providing sustainable wood supply.

3.2.3 Methods

A wood balance framework was developed to provide a platform for disaggregating different supply sources (Figure 7). The framework also provides potential interventions to narrow or eliminate the gap between supply and demand.

The study relied mainly on secondary data from the Philippine Forestry Statistics of FMB, Philippine Statistical Yearbook (2000), ENRAP studies, etc., to assess the extent of forest resources in the country. Likewise, the trends on wood production, export and import, and availability of raw materials from various sources were also analyzed. A limited validation of national statistics was also conducted based on the regional data submitted by selected regions.
The past, present and future demand for and supply of wood in the country were evaluated using secondary data. The study relied on some assumptions particularly on the production and consumption trends for the past 12 years. Individual supply and demand accounts for different major wood products like sawlogs, peeler/veneer logs, poles and local construction timber, pulpwood and fuelwood/firewood, and for secondary wood products like sawnwood/lumber and plywood were also analyzed and projected. Subsidiary accounts for relevant non-timber forest products were also developed and formulated.

The average changes in demand and supply for these wood products for the period 1990 to 2000 were determined. These were then used to project the demand and supply for the years 2005 to 2030 considering some adjustments. The surpluses (or deficits) for the years 2005 to 2030 were also based on several assumptions listed as footnotes in each table.

**Figure 3.7. Framework: supply and demand model for wood products.**

**SYSTEM INTERVENTIONS:**
- Fresh investments in plantations, processing
- Sustainable harvesting/improve access in legal natural sources
- Importation
- Efficiency in wood utilization
- Market development
3.2.4 Results of the Substudy

3.2.4.1 Physical Forest Account

In year 2000, the Philippines has a total forest land area of 15,854,922 ha (Table 3.43). Of this, 1,089,118 ha (6.87 %) are still under the category of unclassified public forest land. Dipterocarp forests covers around 3,448,500 ha of which around 796,900 ha are old growth, hence, closed to logging. Of the remaining 2,651,600 ha of residual dipterocarp forests, there is still an estimated 30 % to be covered under protection forest, hence, total area available to sustainable harvest is around 1,856,100 ha.

There is also an estimated 65,000 ha forest plantations within private lands in the year 2000 (both registered and unregistered) based on adjusted figure from Carandang, M. et al, 1998.

3.2.4.2 Potential Timber Volume

In 2000, there is an estimated 642.3 mil cu m of timber in the Philippine forests including those timber planted in private lands (Table 3.44). Of these, 254.22 mil cu m are within residual production forests. Volume of old growth dipterocarp forests was estimated at 198.79 mil cu m for the same year. This level is projected to decrease insignificantly through time due to its inaccessibility and strict protection.

There is also a significant volume of wood in brushland areas amounting to 22.32 mil cu m. However, these timbers exist in non-commercial quantities per unit area and are subject to unregulated fuelwood gathering. Brushland areas are also prone to occasional burning.

3.2.4.3 Forest Management Systems

In 2000, around 12.034 million ha (75.90 %) of forestlands are under formal management systems (Table 3.45). The bulk of these is covered by CBFM program where around 5.708 mil ha are under various CBFM projects. CBFM is expected to expand further to around 8.5 mil ha by the year 2015 as envisioned by the Department. All TLAs are expected to expire on or before Year 2011. Consequently, the number and area of IFMAs/ITPLAs and other modes of forest disposition such as joint venture, co-production and production sharing are expected to increase at 1.2 million hectares by 2015.

From a high of 413,600 ha of pasture/grazing leases in 1990, only around 122,000 ha are leased in 2000. The skid was primarily due to declining interest of pasture lease holders to continue with the business due to low economic returns resulting from low productivity of pasture areas, lack of government support to the business and high costs of operations, among others. However, initial consultations showed that the sector will endeavor to maintain at least 300,000 ha of permanent grazing and pasture areas through time, to be improved and intensively managed as such. This area can still be increased (or decreased) substantially as estimates of grasslands available for grazing is around 1.5 million ha (pls refer back to Table 3.43).

Considering the above statistics, a large chunk of public forestlands or around 3.8 mil ha is still under open access conditions. Considering further the social dimension of forestlands in the Philippines, there is a high probability that most of these areas are already claimed, occupied or cultivated. It maybe noted, however, that as envisioned under the Revised Forestry Master Plan, all open access areas will be totally closed by the year 2025. This means that all efforts shall be exerted to put every hectare of forestland in this country under a formal sustainable management system.
### Table 3.43. National physical forest accounts/landcover status.

<table>
<thead>
<tr>
<th>National Forest Account</th>
<th>1990/a</th>
<th>2000</th>
<th>2010</th>
<th>2020</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Dipterocarp</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Old growth</td>
<td>861.2</td>
<td>796.9</td>
<td>756.6</td>
<td>756.6</td>
</tr>
<tr>
<td>Second Growth (Residual Dipt.)</td>
<td>3,287.6</td>
<td>2,651.6</td>
<td>2,254.1</td>
<td>2,254.1</td>
</tr>
<tr>
<td>Protection Forest</td>
<td>986.3</td>
<td>795.5</td>
<td>676.2</td>
<td>676.2</td>
</tr>
<tr>
<td>Production Forest</td>
<td>2,301.3</td>
<td>1,856.1</td>
<td>1,577.9</td>
<td>1,577.9</td>
</tr>
<tr>
<td><strong>Mossy</strong></td>
<td>1,113.7</td>
<td>1,029.8</td>
<td>977.4</td>
<td>977.4</td>
</tr>
<tr>
<td>Pine Forests</td>
<td>236.4</td>
<td>213.5</td>
<td>199.3</td>
<td>199.3</td>
</tr>
<tr>
<td>Closed</td>
<td>128.3</td>
<td>123.3</td>
<td>120.1</td>
<td>120.1</td>
</tr>
<tr>
<td>Open</td>
<td>108.1</td>
<td>103.4</td>
<td>100.5</td>
<td>100.5</td>
</tr>
<tr>
<td>Submarginal</td>
<td>527.4</td>
<td>467.6</td>
<td>430.3</td>
<td>430.3</td>
</tr>
<tr>
<td>Brushlands</td>
<td>2,455.6</td>
<td>2,200.4</td>
<td>2,040.9</td>
<td>2,040.9</td>
</tr>
<tr>
<td>Forest Plantations (Forest Lands)</td>
<td>364.3</td>
<td>720.8</td>
<td>1,143.6</td>
<td>1,143.6</td>
</tr>
<tr>
<td>Mangrove Forests</td>
<td>132.5</td>
<td>120.4</td>
<td>127.2</td>
<td>131.2</td>
</tr>
<tr>
<td>- Naturally-Forested Mangrove */d</td>
<td>128.5</td>
<td>112.4</td>
<td>102.2</td>
<td>102.2</td>
</tr>
<tr>
<td>- Mangrove Plantations</td>
<td>4.0</td>
<td>8.0</td>
<td>25.0</td>
<td>29.0</td>
</tr>
<tr>
<td>- Open/denuded/reverted fishponds</td>
<td>25.0</td>
<td>21.0</td>
<td>4.0</td>
<td>-</td>
</tr>
<tr>
<td>Grasslands/open areas */c</td>
<td>1,542.9</td>
<td>1,497.1</td>
<td>1,467.3</td>
<td>1,438.1</td>
</tr>
<tr>
<td>Extensive use/Cultivated areas */c</td>
<td>5,335.7</td>
<td>6,122.6</td>
<td>6,432.9</td>
<td>6,462.1</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>15,882.3</td>
<td>15,854.9</td>
<td>15,854.9</td>
<td>15,854.9</td>
</tr>
<tr>
<td>PLTPs</td>
<td>50.0</td>
<td>65.0</td>
<td>70.0</td>
<td>70.0</td>
</tr>
</tbody>
</table>

**Notes:**
- a/ - PFS, FMB, 1990
- d/ - ENRAP figure.

### Table 3.44. National forest volume account (in Mil cu m).

<table>
<thead>
<tr>
<th>Forest Type</th>
<th>1990</th>
<th>2000</th>
<th>2010</th>
<th>2020</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Dipterocarp</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Old growth */</td>
<td>212.42</td>
<td>198.79</td>
<td>196.81</td>
<td>194.84</td>
</tr>
<tr>
<td>Second Growth (Res. Dipterocarp) */</td>
<td>433.30</td>
<td>363.17</td>
<td>312.55</td>
<td>261.93</td>
</tr>
<tr>
<td>Protection Forest (30%)</td>
<td>129.99</td>
<td>108.95</td>
<td>93.76</td>
<td>78.58</td>
</tr>
<tr>
<td>Production Forest (70%)</td>
<td>303.31</td>
<td>254.22</td>
<td>218.78</td>
<td>183.35</td>
</tr>
<tr>
<td><strong>Mossy</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pine Forests */</td>
<td>24.76</td>
<td>23.64</td>
<td>23.17</td>
<td>22.71</td>
</tr>
<tr>
<td>Submarginal</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Brushlands */</td>
<td>24.56</td>
<td>22.32</td>
<td>20.41</td>
<td>20.41</td>
</tr>
<tr>
<td>Forest Plantations (Forest Lands) */</td>
<td>14.57</td>
<td>27.05</td>
<td>37.74</td>
<td>45.74</td>
</tr>
<tr>
<td>Mangrove Forests */</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Naturally-Forested Mangrove Stands */</td>
<td>5.19</td>
<td>4.78</td>
<td>4.69</td>
<td>4.59</td>
</tr>
<tr>
<td>- Mangrove Plantations */</td>
<td>0.04</td>
<td>0.12</td>
<td>0.60</td>
<td>1.16</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>716.8</td>
<td>642.3</td>
<td>598.8</td>
<td>554.2</td>
</tr>
<tr>
<td>PLTPs */</td>
<td>2.0</td>
<td>2.4</td>
<td>2.8</td>
<td>2.8</td>
</tr>
</tbody>
</table>

**Notes:**
- 3/ - Based on 10 cu m/ha, initial estimates made by FRA, 2003.
- 4/ - Castilho, et al., ENRAP, 2000
- 6/ - Based on average volume of 40 cu m per ha (all plantations).
### Wood Supply Projections

Based on current production levels, the supply of different round wood types from legal sources was projected in Table 3.46. Current production levels show that potential wood supply from legal local sources, both natural and artificial forests, is estimated at around 800,000 cu m in the year 2000. This is expected to slightly pick-up in 2005 and beyond due to increase harvest in plantations within CBFM and IFMA areas. However, the projected 2030 wood productions would be way below even with the 1990 level.

A subsidiary account for processed products as well as rattan and bamboo was also presented in Table 3.46. Future production of processed wood products would likely surpass the 2000 level primarily because of increasing contributions of supply from forest plantations.

Table 3.47 shows the projected timber production from various tenured areas within forestlands. Areas of IFMA/ITPLA and other modes as allowed by the 1987 Philippine Constitution, are expected to provide the bulk of wood needs by the country in the future. Currently, these areas are able to provide over 300,000 cu m of wood, both from natural and planted areas.

Table 3.48 presents the potential sustainable supply of wood from residual forests and forest plantations. Based on the analysis using very conservative estimates which utilized a uniform 40 years cutting cycle and a harvestable volume of 80 cu m for matured residual forests, with a safety factor of 70 % for wastes and logging inefficiencies, the potential sustainable supply is significantly higher than current harvests. However, the projected sustainable supply is seen to be decreasing through time because of projected decrease in residual forests by 38,400 ha per year (ENRAP, 1996). Nevertheless, a conditional sustainable annual harvest of 2.32 mil cu m can be steadily maintained if the continued decline of residual forests were fully arrested by year 2005.
Table 3.46. Wood supply projections, local sources, in '000 cu m (status quo).

<table>
<thead>
<tr>
<th>WOOD/PROD. TYPE</th>
<th>1990</th>
<th>2000</th>
<th>2010</th>
<th>2020</th>
<th>2030</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Roundwood</td>
<td>2,503</td>
<td>800</td>
<td>1,377</td>
<td>1,842</td>
<td>1,942</td>
</tr>
<tr>
<td>Sawtimber ('000 cu m)</td>
<td>2,045</td>
<td>362</td>
<td>1,001</td>
<td>1,339</td>
<td>1,412</td>
</tr>
<tr>
<td>Peeler logs ('000 cu m)</td>
<td>111</td>
<td>22</td>
<td>60</td>
<td>80</td>
<td>84</td>
</tr>
<tr>
<td>Pulpwood ('000 cu m)</td>
<td>335</td>
<td>400</td>
<td>306</td>
<td>409</td>
<td>431</td>
</tr>
<tr>
<td>Poles ('000 cu m)</td>
<td>12</td>
<td>16</td>
<td>10</td>
<td>14</td>
<td>14</td>
</tr>
<tr>
<td>Fuelwood (million cu m)</td>
<td>22.97</td>
<td>25.18</td>
<td>27.62</td>
<td>30.32</td>
<td>33.29</td>
</tr>
<tr>
<td>Subsidiary accounts</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lumber ('000 cu m)</td>
<td>841</td>
<td>150</td>
<td>182</td>
<td>220</td>
<td>266</td>
</tr>
<tr>
<td>Veneer</td>
<td>49</td>
<td>178</td>
<td>215</td>
<td>261</td>
<td>315</td>
</tr>
<tr>
<td>Plywood ('000 cu m)</td>
<td>397</td>
<td>286</td>
<td>346</td>
<td>419</td>
<td>507</td>
</tr>
<tr>
<td>Wood-Based Panels</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Particle Board</td>
<td>17</td>
<td>40</td>
<td>48</td>
<td>59</td>
<td>71</td>
</tr>
<tr>
<td>Fiberboard</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rattan (million lm)</td>
<td>19.3</td>
<td>32.3</td>
<td>39</td>
<td>47</td>
<td>57</td>
</tr>
<tr>
<td>Large diameter</td>
<td>7.7</td>
<td>12.9</td>
<td>15.6</td>
<td>18.9</td>
<td>22.9</td>
</tr>
<tr>
<td>Small diameter</td>
<td>11.6</td>
<td>19.4</td>
<td>23.5</td>
<td>28.4</td>
<td>34.4</td>
</tr>
<tr>
<td>Bamboo (million culms)</td>
<td>32.4</td>
<td>35.9</td>
<td>39.6</td>
<td>43.6</td>
<td>48.1</td>
</tr>
</tbody>
</table>

Notes:
- 1990 - 2000 figures, from PFS. Except for fuelwood and bamboo.
- All units in '000 cu m, except for rattan (in '000 lm) and bamboo (in '000 pcs).
1/ = based from average recovery rate of 56% from log to veneer.
Roundwood production for years 2005-2030 was based on projected supply from various sources reflected in Table 5 with average percentage distribution from 1990 to 2000 data.
A 10% increase in the production of subsidiary accounts every 5 years is projected.

Table 3.47. Projected production of timber from legal sources, status quo ('000 cu m).

<table>
<thead>
<tr>
<th>SOURCES</th>
<th>1990</th>
<th>2000</th>
<th>2010</th>
<th>2020</th>
<th>2030</th>
</tr>
</thead>
<tbody>
<tr>
<td>TLA</td>
<td>2,503.0</td>
<td>113.0</td>
<td>30.0</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>IFMA/ITPLA</td>
<td>40.4</td>
<td>308.6</td>
<td>700.0</td>
<td>1,100.0</td>
<td>1,100.0</td>
</tr>
<tr>
<td>Natural</td>
<td>93.2</td>
<td>300.0</td>
<td>500.0</td>
<td>500.0</td>
<td>500.0</td>
</tr>
<tr>
<td>Planted</td>
<td>40.4</td>
<td>215.4</td>
<td>400.0</td>
<td>600.0</td>
<td>600.0</td>
</tr>
<tr>
<td>Logs from CBFM</td>
<td>-</td>
<td>50.0</td>
<td>250.0</td>
<td>350.0</td>
<td>450.0</td>
</tr>
<tr>
<td>Natural</td>
<td>-</td>
<td>50.0</td>
<td>100.0</td>
<td>100.0</td>
<td>100.0</td>
</tr>
<tr>
<td>Planted</td>
<td>-</td>
<td>150.0</td>
<td>250.0</td>
<td>350.0</td>
<td></td>
</tr>
<tr>
<td>PLTP (Natural)</td>
<td>2.5</td>
<td>10.2</td>
<td>5.0</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>PLTP (ln)</td>
<td>280.0</td>
<td>336.0</td>
<td>392.0</td>
<td>392.0</td>
<td>392.0</td>
</tr>
<tr>
<td>TOTAL</td>
<td>2,825.9</td>
<td>817.8</td>
<td>1,377.0</td>
<td>1,842.0</td>
<td>1,942.0</td>
</tr>
</tbody>
</table>
Forest plantations is expected to significantly contribute to the wood supply balance on the basic assumptions that soonest, serious efforts shall be exerted to establish high quality forest plantations, while current existing plantations shall be strictly maintained and improved. Within the next 12 years, the country needs only to develop 467,400 ha of quality plantations in order to be self-sufficient in plantation wood with plenty to spare for supplying the export demand. This area translates to a yearly plantation development of around 40,000 ha. This is physically attainable considering that for the last 20 years, the average annual plantation development rate in the country is around 50,000 ha. However, both government and the private sector must invest fresh funds to realize this scenario.

Although estimates for bamboo resources in the country is still very sketchy, available figures show that in year 2000, there is an estimated 28,000 ha of bamboo stands (both natural and planted, all sizes) in the country (Table 3.49). The potential supply from this stand is estimated at 35.9 mil culms. The potential supply of large diameter culms is around 40% of the total supply. With the inclusion of bamboo plantation as one of the strategic development components in several CBFM sites, this supply is expected to increase steadily until year 2030, provided that current stands are strictly protected from destruction and land use conversion.

Table 3.48. Potential sustainable supply of timber from second growth forests and plantations.

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Area (million ha)</td>
<td>3.287</td>
<td>2.755</td>
<td>2.371</td>
<td>1.987</td>
<td>1.603</td>
</tr>
<tr>
<td>Volume (million cu m)</td>
<td>433.3</td>
<td>363.2</td>
<td>312.5</td>
<td>261.9</td>
<td>211.3</td>
</tr>
<tr>
<td>Sustainable cut (m cu m) a/</td>
<td>3.22</td>
<td>2.70</td>
<td>2.32</td>
<td>1.95</td>
<td>1.57</td>
</tr>
<tr>
<td>Forest Plantations</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Production Area ('000 ha)</td>
<td>364.32</td>
<td>676.24</td>
<td>943.59</td>
<td>1143.6</td>
<td>1143.6</td>
</tr>
<tr>
<td>PLtn Devpt schedule</td>
<td>156.0</td>
<td>222.8</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Volume (million cu m)</td>
<td>14.6</td>
<td>27.0</td>
<td>37.7</td>
<td>45.7</td>
<td>45.7</td>
</tr>
<tr>
<td>Potential cut (m cu m)</td>
<td>0.31</td>
<td>0.57</td>
<td>0.79</td>
<td>0.96</td>
<td>0.96</td>
</tr>
<tr>
<td>Total</td>
<td>3.53</td>
<td>3.27</td>
<td>3.12</td>
<td>2.91</td>
<td>2.53</td>
</tr>
</tbody>
</table>

Notes:
- Steady rate of second growth loss from 1990-1997 is 38,400 ha/year (PEENRA/ENRAP).
- Estimated average volume of second growth is 131.821 cu m/ha, ENRAP, 1992.
- Estimated average volume of matured second growth is 181.0 cu m/ha.
- Sustainable cut from residual dipterocarp = total residual under production forests/40 yrs cutting cycle * 80 cu m harvestable volume per ha * .7 safety factor. Total residual under production forest estimated to be 70% of total residual area.
- Potential cut from plantations = Area * 0.30 (production forest) / 10 (ave.rotation) * 80 (ave. vol.) *.7 (waste factor).

Forest plantations is expected to significantly contribute to the wood supply balance on the basic assumptions that soonest, serious efforts shall be exerted to establish high quality forest plantations, while current existing plantations shall be strictly maintained and improved. Within the next 12 years, the country needs only to develop 467,400 ha of quality plantations in order to be self-sufficient in plantation wood with plenty to spare for supplying the export demand. This area translates to a yearly plantation development of around 40,000 ha. This is physically attainable considering that for the last 20 years, the average annual plantation development rate in the country is around 50,000 ha. However, both government and the private sector must invest fresh funds to realize this scenario.

Although estimates for bamboo resources in the country is still very sketchy, available figures show that in year 2000, there is an estimated 28,000 ha of bamboo stands (both natural and planted, all sizes) in the country (Table 3.49). The potential supply from this stand is estimated at 35.9 mil culms. The potential supply of large diameter culms is around 40% of the total supply. With the inclusion of bamboo plantation as one of the strategic development components in several CBFM sites, this supply is expected to increase steadily until year 2030, provided that current stands are strictly protected from destruction and land use conversion.

One of the major wood needs of the country is fuelwood. A great part of fuelwood supply is burned in rural firewood stoves and urban charcoal stoves. FAO (1988) as stated in Carandang, et. al (1999), estimated that the per capita consumption of fuelwood in the country is around 0.566 cu m per year. Table 3.50 shows the potential supply of fuelwood from various sources. The leading source of fuelwood in the country is from agricultural areas, most notably, from coconut plantations and boundary tree plantings along farms. This accounts for 55.25% of total fuelwood supply. However, a large chunk of fuelwood supply is still sourced from natural forests accounting for 38.75% of the total supply. This translates to 9.81 mil cu m of all types of wood burned in the stoves of most Filipino homes in the country. It must be noted, however, that this wood comes mainly from branches, tops and other dried wood parts coming from brushlands, and to a certain extent, from residual forests.
Some provinces with still vast forest areas use fuelwood at a much higher rate than the national average. Mainland Palawan, for example, consumes fuelwood twice as much as the national average, at 1.16 cu m per capita per year (Carandang, et al., 1999). This consumption pattern has profound impacts in nearby forests as fuelwood gathering (both for charcoal and firewood) is observed to be concentrated in concentric patterns, within 5 km radius from community and urban centers in mainland Palawan. Mangrove forests are also main targets of charcoal makers because of the generally very good heating quality of mangrove species.

3.2.4.5 Wood Importation

Under status quo conditions, roundwood import will steadily increase through time. This is expected because of the need for high quality timber for lumber and furniture that can not be supplied from local plantations. By the year 2020, expected import of roundwood is around 1.0 million cu m (Table 3.51). Likewise, import of finished products would steadily increase through time. The furniture industry in Cebu City, for example, is the main importer of high quality lumber. The strict and high quality requirements of Cebu furniture industry render plantation grown timber inappropriate for the export-oriented industry. In 2000 alone, around 358,514 cu m of lumber were imported by the country, almost 50 % of which came from Malaysia.

Table 3.52 shows the import-export balance for different wood products. The analysis shows that with the current trends in wood production, the country will remain to be net importer of wood products throughout the planning period considered (2000-2030).
Table 3.51. Wood supply projections, with imports, in '000 cu m (status quo).

<table>
<thead>
<tr>
<th>WOOD/PROD. TYPE</th>
<th>1990</th>
<th>2000</th>
<th>2010</th>
<th>2020</th>
<th>2030</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Roundwood</td>
<td>2,844.2</td>
<td>1,383.5</td>
<td>2,150.4</td>
<td>2,864.8</td>
<td>3,294.7</td>
</tr>
<tr>
<td>Roundwood Import</td>
<td>381.2</td>
<td>584.8</td>
<td>773.4</td>
<td>1,022.8</td>
<td>1,352.7</td>
</tr>
<tr>
<td>Sawtimber ('000 cu m)</td>
<td>2,044.6</td>
<td>361.0</td>
<td>1,001.1</td>
<td>1,339.2</td>
<td>1,411.9</td>
</tr>
<tr>
<td>Peeler logs ('000 cu m)</td>
<td>111.4</td>
<td>21.7</td>
<td>59.8</td>
<td>80.0</td>
<td>84.3</td>
</tr>
<tr>
<td>Pulpwood ('000 cu m)</td>
<td>335.0</td>
<td>400.0</td>
<td>305.9</td>
<td>409.2</td>
<td>431.5</td>
</tr>
<tr>
<td>Poles ('000 cu m)</td>
<td>12.0</td>
<td>16.0</td>
<td>10.2</td>
<td>13.6</td>
<td>14.4</td>
</tr>
<tr>
<td>Fuelwood (million cu m)</td>
<td>23.0</td>
<td>25.2</td>
<td>27.6</td>
<td>30.3</td>
<td>33.3</td>
</tr>
<tr>
<td>Subsidiary accounts</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lumber ('000 cu m)</td>
<td>844.7</td>
<td>508.5</td>
<td>655.6</td>
<td>846.7</td>
<td>1,095.0</td>
</tr>
<tr>
<td>Veneer</td>
<td>49.1</td>
<td>297.3</td>
<td>373.2</td>
<td>469.3</td>
<td>591.4</td>
</tr>
<tr>
<td>Plywood ('000 cu m)</td>
<td>400.1</td>
<td>287.0</td>
<td>347.4</td>
<td>420.5</td>
<td>509.0</td>
</tr>
<tr>
<td>Wood-Based Panels</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Particle Board</td>
<td>17.0</td>
<td>40.0</td>
<td>48.4</td>
<td>58.6</td>
<td>70.9</td>
</tr>
<tr>
<td>Fiberboard</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rattan (million lm)</td>
<td>19.3</td>
<td>32.3</td>
<td>39.1</td>
<td>47.3</td>
<td>57.2</td>
</tr>
<tr>
<td>Large diameter</td>
<td>7.7</td>
<td>12.9</td>
<td>15.6</td>
<td>18.9</td>
<td>22.9</td>
</tr>
<tr>
<td>Small diameter</td>
<td>11.6</td>
<td>19.4</td>
<td>23.5</td>
<td>28.4</td>
<td>34.4</td>
</tr>
<tr>
<td>Bamboo (million culms)</td>
<td>32.4</td>
<td>35.9</td>
<td>39.6</td>
<td>43.6</td>
<td>48.1</td>
</tr>
</tbody>
</table>

Notes:
1. 1990 - 2000 figures, from PFS. Except for fuelwood and bamboo.
2. All units in '000 cu m, except for rattan (in '000lm) and bamboo (in '000 pcs).
3/ = based from average recovery rate of 56% from log to veneer.
- Roundwood production four years 2005-2030 was based on projected supply from various sources reflected in Table 45 with percentage distribution from 1990 to 2000 data.
- A 10% increase in the production of subsidiary accounts every 5 years is projected.

Table 3.52. Export-import of major wood products, status quo (in '000 cu m).

<table>
<thead>
<tr>
<th>Commodity</th>
<th>1990</th>
<th>2000</th>
<th>2010</th>
<th>2020</th>
<th>2030</th>
</tr>
</thead>
<tbody>
<tr>
<td>Export</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Roundwood</td>
<td>51.0</td>
<td>-</td>
<td>20.0</td>
<td>600.0</td>
<td>1,200.0</td>
</tr>
<tr>
<td>Lumber</td>
<td>77.0</td>
<td>120.0</td>
<td>172.5</td>
<td>269.5</td>
<td>421.1</td>
</tr>
<tr>
<td>Veneer</td>
<td>47.0</td>
<td>5.0</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Plywood</td>
<td>176.0</td>
<td>2.2</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Import</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Roundwood/log</td>
<td>381.2</td>
<td>584.8</td>
<td>773.4</td>
<td>1,022.8</td>
<td>1,352.7</td>
</tr>
<tr>
<td>Lumber</td>
<td>3.7</td>
<td>358.5</td>
<td>474.1</td>
<td>627.0</td>
<td>829.3</td>
</tr>
<tr>
<td>Veneer</td>
<td>0.1</td>
<td>119.3</td>
<td>157.8</td>
<td>208.7</td>
<td>276.0</td>
</tr>
<tr>
<td>Plywood</td>
<td>3.1</td>
<td>1.0</td>
<td>1.3</td>
<td>1.8</td>
<td>2.3</td>
</tr>
<tr>
<td>Tot. fin. Prod. import</td>
<td>6.9</td>
<td>478.9</td>
<td>633.3</td>
<td>837.5</td>
<td>1,107.6</td>
</tr>
<tr>
<td>Balance</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Roundwood/log</td>
<td>(330.2)</td>
<td>(584.8)</td>
<td>(753.4)</td>
<td>(422.8)</td>
<td>(152.7)</td>
</tr>
<tr>
<td>Lumber</td>
<td>73.3</td>
<td>(238.5)</td>
<td>(301.6)</td>
<td>(357.5)</td>
<td>(408.1)</td>
</tr>
<tr>
<td>Veneer</td>
<td>46.9</td>
<td>(114.3)</td>
<td>(157.8)</td>
<td>(208.7)</td>
<td>(276.0)</td>
</tr>
<tr>
<td>Plywood</td>
<td>172.9</td>
<td>1.2</td>
<td>(1.3)</td>
<td>(1.8)</td>
<td>(2.3)</td>
</tr>
</tbody>
</table>


Note: 2005 to 2030 projected wood imports based on 15% increase per five year period.
3.2.4.6 Wood Products Demand

As sure as the population increases and with the advent of industrialization, wood products demand is also expected to steadily increase through time. Based on 2000 Philippine wood consumption data, the country required 1.991 mil cu m of round wood which were then directly converted into different finished products (Table 3.53). Assuming that imports of finished and semi-finished wood products were translated into roundwood requirement, the country then could have consumed around 2.949 mil cu m. By the year 2030, total roundwood requirements of the country would peak at 3.805 mil cu m. Considering further the log requirements of imported wood products, a total of 6.020 mil cu m of roundwood would be required by the country by that year.

Table 3.53. Wood and other wood/forest products demand 1990-2030.

<table>
<thead>
<tr>
<th>WOOD/PROD. DEMAND</th>
<th>1990</th>
<th>2000</th>
<th>2010</th>
<th>2020</th>
<th>2030</th>
</tr>
</thead>
<tbody>
<tr>
<td>Adjusted Total Roundwood</td>
<td>3,505.8</td>
<td>2,949.0</td>
<td>3,732.7</td>
<td>4,735.2</td>
<td>6,019.9</td>
</tr>
<tr>
<td>Total Roundwood</td>
<td>3,492.0</td>
<td>1,991.3</td>
<td>2,466.1</td>
<td>3,060.1</td>
<td>3,804.6</td>
</tr>
<tr>
<td>Sawtimber ('000 cu m)</td>
<td>2,652.4</td>
<td>968.8</td>
<td>1,166.0</td>
<td>1,403.3</td>
<td>1,689.0</td>
</tr>
<tr>
<td>Peeler logs ('000 cu m)</td>
<td>111.4</td>
<td>21.7</td>
<td>26.1</td>
<td>31.4</td>
<td>37.8</td>
</tr>
<tr>
<td>Pulpwood</td>
<td>335.0</td>
<td>400.0</td>
<td>481.4</td>
<td>579.4</td>
<td>697.3</td>
</tr>
<tr>
<td>Poles ('000 cu m)</td>
<td>12.0</td>
<td>16.0</td>
<td>19.3</td>
<td>23.2</td>
<td>27.9</td>
</tr>
<tr>
<td><strong>Fuelwood (million cu m)</strong></td>
<td><strong>32.4</strong></td>
<td><strong>40.9</strong></td>
<td><strong>50.1</strong></td>
<td><strong>61.4</strong></td>
<td><strong>75.5</strong></td>
</tr>
<tr>
<td><strong>Subsidiary accounts</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lumber ('000 cu m)</td>
<td>844.7</td>
<td>508.5</td>
<td>655.6</td>
<td>846.7</td>
<td>1,095.0</td>
</tr>
<tr>
<td>Veneer</td>
<td>49.1</td>
<td>297.3</td>
<td>373.2</td>
<td>469.3</td>
<td>591.4</td>
</tr>
<tr>
<td>Plywood ('000 cu m)</td>
<td>400.1</td>
<td>287.0</td>
<td>347.4</td>
<td>420.5</td>
<td>509.0</td>
</tr>
<tr>
<td>Wood-Based Panels</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Particle Board ('000 tons)</td>
<td>-</td>
<td>2.6</td>
<td>17.1</td>
<td>19.6</td>
<td>21.9</td>
</tr>
<tr>
<td>Fiberboard ('000 tons)</td>
<td>-</td>
<td>53.0</td>
<td>63.0</td>
<td>72.4</td>
<td>80.7</td>
</tr>
<tr>
<td>Rattan (million lm) /b</td>
<td>27.0</td>
<td>45.2</td>
<td>53.8</td>
<td>61.7</td>
<td>68.9</td>
</tr>
<tr>
<td>Large diameter</td>
<td>10.8</td>
<td>18.1</td>
<td>21.5</td>
<td>24.7</td>
<td>27.5</td>
</tr>
<tr>
<td>Small diameter</td>
<td>16.2</td>
<td>27.1</td>
<td>32.3</td>
<td>37.0</td>
<td>41.3</td>
</tr>
<tr>
<td>Bamboo-big dia (mil culms)</td>
<td>5.9</td>
<td>13.8</td>
<td>16.4</td>
<td>18.8</td>
<td>21.0</td>
</tr>
</tbody>
</table>

1/ Adjusted total roundwood requirements include import of finished and semi-finished products converted into log requirement considering a 50% conversion efficiency for all products.

Notes:

1. 1990 - 2000 wood products demand are actual production based on PFS plus imports with adjustments to sawtimber to include informal productions.
2. Informal productions was estimated at 607.8 thousand cu m, 1990 MPFD.
3. Fuelwood demand is based on 0.566 cu m/capita (FAO, NHMP, 1988).
4. 2005 - 2030 wood demand based 2000 figures with increase based on population increase which is progressively decreasing at a rate of 0.15 percent every 5 years due to effects of products substitution (demand shift), efficiency in use, and more environmentally conscious consumers.
5. Projection of bamboo used the low estimates of 1990.
6. Rattan demand based on actual productions + 40% adjustments for unreported harvests.
7. Bamboo demand excludes small diameter culms like boho, etc., PFS figures with adjustments from informal harvests (100%) and private land productions (300%).
### 3.2.4.7 Supply and Demand Balance

Considering the total potential legal supply from our forest resources, the country will be experiencing as it is already experiencing at present, serious supply deficit on all wood products fronts except for particle board where surpluses were still incurred (Table 3.54). This would continue to be so throughout the planning period. The projected deficit in wood supply is the direct result of disallowing sustainable access to available natural supply of timber, particularly in residual dipterocarp forests.

As regards to other non-timber forest products (NTFP), the country is also likely to encounter deficits in these areas. There would be continuing shortage of rattan poles in the future. Large diameter bamboo also incurred surpluses in the 1990s to 2000 but would likely encounter deficits beginning year 2005 as continuous increase in demand would likely surpass the available supply.

However, considering that the vast timber resources in residual forests would be tapped sustainably, the wood balance scenario would be reversed towards surpluses. Based on the analysis, the country can still sustainably access at least 2.512 mil cu m of wood from residual forests by the year 2005. This can be attained by allowing other modes of forest disposition as allowed by the Constitution to sustainably access from natural forests. Considering harvests from other sources such as forest plantations, the country could still produce a surplus of 1.572 mil cu m which can be readily exported in various finished forms (Table 3.55). But due to projected decrease in the residual forests in the amount of 38,400 ha per year as estimated by ENRAP (1992), deficit would still be incurred in the year 2025 and beyond. However, strict protection of residual forests; e.g., targeting a zero decrease by 2005 and beyond, no deficit in wood supply would be experienced by the country until year 2050. Table 3.56 shows the summary of wood supply and demand balance scenarios highlighting the wood balance results under the status quo and sustainable forestry conditions as also illustrated in Figures 3.8 & 3.9.

#### Table 3.54. Supply and demand balance (status quo, without imports).

<table>
<thead>
<tr>
<th>Products</th>
<th>1990</th>
<th>2000</th>
<th>2010</th>
<th>2020</th>
<th>2030</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Total Roundwood</strong></td>
<td>(989.0)</td>
<td>(1,191.5)</td>
<td>(1,089.1)</td>
<td>(1,218.1)</td>
<td>(1,862.6)</td>
</tr>
<tr>
<td>Sawtimber ('000 cu m)</td>
<td>(607.8)</td>
<td>(606.8)</td>
<td>(164.9)</td>
<td>(64.2)</td>
<td>(277.1)</td>
</tr>
<tr>
<td>Peeled logs ('000 cu m)</td>
<td>-</td>
<td>0.1</td>
<td>33.7</td>
<td>48.6</td>
<td>46.6</td>
</tr>
<tr>
<td>Pulpwood</td>
<td>-</td>
<td>-</td>
<td>(175.5)</td>
<td>(170.2)</td>
<td>(265.9)</td>
</tr>
<tr>
<td>Poles ('000 cu m)</td>
<td>-</td>
<td>-</td>
<td>(9.1)</td>
<td>(9.6)</td>
<td>(13.5)</td>
</tr>
<tr>
<td><strong>Fuelwood (million cu m)</strong></td>
<td>(9.5)</td>
<td>(15.8)</td>
<td>(22.4)</td>
<td>(31.1)</td>
<td>(42.2)</td>
</tr>
<tr>
<td><strong>Subsidiary accounts</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lumber ('000 cu m)</td>
<td>(3.7)</td>
<td>(358.5)</td>
<td>(474.1)</td>
<td>(627.0)</td>
<td>(829.3)</td>
</tr>
<tr>
<td>Veneer</td>
<td>(0.1)</td>
<td>(119.3)</td>
<td>(157.8)</td>
<td>(208.7)</td>
<td>(276.0)</td>
</tr>
<tr>
<td>Plywood ('000 cu m)</td>
<td>(3.1)</td>
<td>(1.0)</td>
<td>(1.3)</td>
<td>(1.8)</td>
<td>(2.3)</td>
</tr>
<tr>
<td><strong>Wood-Based Panels</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Particle Board</td>
<td>17.0</td>
<td>37.4</td>
<td>31.3</td>
<td>39.0</td>
<td>49.0</td>
</tr>
<tr>
<td>Fiberboard</td>
<td>-</td>
<td>(53.0)</td>
<td>(63.0)</td>
<td>(72.4)</td>
<td>(80.7)</td>
</tr>
<tr>
<td>Rattan (million lm)</td>
<td>(7.7)</td>
<td>(12.9)</td>
<td>(14.7)</td>
<td>(14.5)</td>
<td>(11.6)</td>
</tr>
<tr>
<td>Large diameter</td>
<td>(3.1)</td>
<td>(5.2)</td>
<td>(5.9)</td>
<td>(5.8)</td>
<td>(4.7)</td>
</tr>
<tr>
<td>Small diameter</td>
<td>(4.6)</td>
<td>(7.7)</td>
<td>(8.8)</td>
<td>(8.6)</td>
<td>(6.9)</td>
</tr>
<tr>
<td>Bamboo (million culms)</td>
<td>7.1</td>
<td>0.6</td>
<td>(0.6)</td>
<td>(1.4)</td>
<td>(1.8)</td>
</tr>
</tbody>
</table>
Table 3.56. Summary, supply and demand balance.

<table>
<thead>
<tr>
<th>Source</th>
<th>1990</th>
<th>2000</th>
<th>2010</th>
<th>2020</th>
<th>2030</th>
</tr>
</thead>
<tbody>
<tr>
<td>RW Supply with imports</td>
<td>2,503.0</td>
<td>799.7</td>
<td>1,377.0</td>
<td>1,842.0</td>
<td>1,942.0</td>
</tr>
<tr>
<td>Demand</td>
<td>3,492.0</td>
<td>1,991.3</td>
<td>2,466.1</td>
<td>3,060.1</td>
<td>3,804.6</td>
</tr>
<tr>
<td>Balance</td>
<td>(989.0)</td>
<td>(1,191.5)</td>
<td>(1,089.1)</td>
<td>(1,218.1)</td>
<td>(1,862.6)</td>
</tr>
<tr>
<td>Sustainable Scenario</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Potential Supply</td>
<td>3,807.3</td>
<td>3,603.9</td>
<td>3,508.2</td>
<td>3,299.9</td>
<td>2,923.6</td>
</tr>
<tr>
<td>Demand</td>
<td>3,492.0</td>
<td>1,991.3</td>
<td>2,466.1</td>
<td>3,060.1</td>
<td>3,804.6</td>
</tr>
<tr>
<td>Balance</td>
<td>315.3</td>
<td>1,612.69</td>
<td>1,042.1</td>
<td>239.8</td>
<td>(881.1)</td>
</tr>
</tbody>
</table>

Figure 3.8. Supply & demand scenario, status quo.
3.2.4.8 Policy Implications/Recommendations

- Sustainable management of natural forests allowing sustainable access to harvest timber from residual forests

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 continue to flourish. 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 hundred thousand hectares or so annually. On the contrary, putting portions of residual forests into sustainable management would reap tremendous benefits for the society, both in economic and environmental terms.

This national wood balance study shows that with enough safeguards, a sustainable harvest from residual forests (within production forest zones) can be afforded providing enough wood that would eliminate a major bulk of importation. One of the key safeguards would be the strict protection of residual forests (and all forest stands for that matter) to prevent their conversion into non-sustainable non-forest uses. Even without legal logging, residual forests are still being lost due to population pressure.

Forest science 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, FDC, 1992), 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 wood supply is to identify and delineate on the ground all public forest lands in the country. The next step is the identification and delineation of permanent production forests throughout the country which will form part of permanent production forest estate, to be maintained and managed as such at all costs. All forests needed for production purposes shall be identified on the grounds of current legal status of the area, biophysical characteristics which can support sustainable production of various forest goods, socio-economic viability and environmental soundness. This process would afford our society, especially the poor and marginalized upland dwellers, vast opportunities to benefit
from sustainable forest management. On the same hand, this process puts in equal importance, identification and delineation of all forest areas needed for protection purposes.

The next step is to develop sustainable forest management plans over these areas, whoever the managers are. Whatever appropriate planning strategy applicable to the area (e.g., participatory and gender sensitive planning, etc.) must be observed. 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 with the overall larger plan of the watershed of 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.

- Developing forest disposition models and implementation of JV, CP, PS

As the traditional forest licensing system has been outmoded and/or outlawed under the 1987 Philippine Constitution, other modes of forest resources utilization like direct production by the State, joint venture (JV), co-production (CP), and production sharing (PS) must be developed and implemented along the idea of improving legal access to forest resources. It is foreseen that with the active involvement of the government in the direct management of forest resources, all open access areas will be developed and the rate of forest loss would be diminished.

- More focused plantation development and plantation renewal

There is a world of difference between plantation development for purposes of forest rehabilitation and plantation development for commercial timber production. The former requires management regimes which would enhance the protective and ecological values of plantations and of the forests over time, while the latter would require management regimes which would enhance the commercial value of the product over a specific rotation. Nevertheless, both require careful planning and execution starting from choice of species, seed selections, nursery operations, site preparations, outplanting, silvicultural treatments and subsequent management interventions; in order to attain optimum benefits for intended beneficiaries. Thus, plantation managers must be aware and equipped with the necessary skills in tending the plantations to attain its desired outcome.

Based on the analysis, the country need not plant vast areas of land for timber plantation in order to satisfy plantation wood demand. Over the next ten years, it would need only around 460,000 hectares to satisfy plantation wood demand with plenty to spare for the export demand. Many regions of the country has comparative advantage with regards to attaining high plantation yield. The government must concentrate on these regions to attain economic efficiency. Some simple requirements, however, are needed to sustain positive wood balance. These are protection and improvement of existing plantations; improve efficiency in wood utilization; and aggressive renewal of harvested plantation areas.

- Rationalization of wood processing plants

Many wood processing plants in the country are not appropriate anymore, efficiency or location-wise. There is proliferation of some plants in some areas while wood producers in other areas need to transport their logs over long distances in order to process them. Processing
equipment are becoming obsolete due to the changing dimensions of raw materials and the environmental demand to be efficient is becoming louder. Thus, there is a need to rationalize the wood processing plants in the country. Among the basic considerations to be followed in this effort are as follows:

- Strategic siting of processing plants with few large integrated plants spread geographically and with appropriate number of small plants (e.g., mini band-sawmills and cement-board plants, etc. serving current timber producers in particular areas). This plan entails phase-out or non-renewal of inefficient and obsolete processing plants, plants with non-sustainable raw material sources, and those that are economically-isolated, hence very costly to operate. Likewise, this would also entail establishment of new plants to serve areas currently needing such facilities or would need such facilities in the future (e.g., cluster of private land tree farmers, CBFM projects and other timber producers).

- Retooling of equipment, facilities and manpower to ensure high recovery and optimum quality of wood products.

- Backward, forward and lateral integration of the whole industry, from raw material producers to processing plants to market outlets. This would afford the actors in the industry access to vital market information, hence, economical flow of wood products.

- Setting up of enabling policy conditions for the rationalization effort. The process would necessitate a clear framework for rationalization through an executive issuance which will require technical support from the DENR such as identification of strategic areas where processing plants are needed, assistance in the dismantling and disposition of obsolete plants, incentives in the retooling of equipment, facilities and manpower, removal of non-tariff barriers imposed by log exporting countries through bilateral agreements, etc.

- Research and Development

  The quest for improvement in production efficiency and product quality must be a continuing concern of the sector. One of the major concerns of forest based industries is how can plantation timber fit in the many raw material needs of the industry. Apparently, one of the most common plantation woods being produced in the country, which is gmelina, does not pass the basic standards of the industry in terms wood quality, and seasoning and grain properties. Moreover, many management prescriptions in the natural forests (e.g., AAC, cutting cycle, silvicultural treatments, etc.) are ought to be re-examined in view of the changing dimensions of raw materials, the social settings in which they are located and environmental demands of the larger society which affect many forest policy decisions.

3.5 Subsectoral Visions, Objectives and Targets

Several subsectoral visions focusing on particular subsector were formulated during the regional workshops. These visions represent the long term aspirations of different stakeholders who attended the consultations:

- Workshop 1 – Manila – July 7-8, 2003

  - Watershed: Watershed as a sustainably co-managed ecosystem supporting the needs of empowered stakeholders living in harmony with nature.
- Forest-based industries: A rationalized forest-based industry with sustainable sources of raw materials, competitive-market products, and improved well-being of workers and people in affected communities

- **Workshop 2 – Los Banos, Laguna – July 10-11, 2003**
  - Forestry education and training: A globally competitive and excellent forestry education and training in R&D relevant and responsive to the changing needs of the forestry sector and society;
  - Research and Development: R&D Institutions that are effective, capacitated, responsive, efficient, competent and committed to people-centered sustainable forest management.

- **Workshop 3 – Iloilo City – July 22, 2003**
  - NWFP Production: Non-wood forest-based industries with sustainable supply of raw materials for the production of economically viable and globally-competitive products to uplift the socio-economic well-being of upland communities and other stakeholders without impairing the other ecological value of the area and for the nontimber forest products production.
  - NWFP Utilization: A progressive, productive, and globally competitive NTFP sector for sustainable resources and socio-economic development.

- **Workshop 4 – Cebu City – July 24-25, 2003**
  - Watershed: Developed watersheds sustainably managed by empowered stakeholders for prosperity.
  - Urban Forestry: An urban area with lush vegetations, cool and fresh air for the psychological, physiological, and economic well-being of the dwellers through sustainable management.
  - Mangrove and coastal marine resources: Mangrove, coastal and marine ecosystems that are productive, sustainable and contributing to socio-economic, cultural and ecological well-being of the coastal dwellers and other stakeholders.
  - Herbal Industries: A progressive, productive and globally competitive herbal industry from sustainable forest resources for socio-cultural and economic development.

- **Workshop 5 – Baguio City – July 31-August 1, 2003**
  - Watershed: A sustainably managed watershed in partnership with various stakeholders providing the necessary life support for hydro-ecological cultural and economic security.
  - Protected Area Management: A society of empowered, self-reliant Filipinos, well-informed of environment-development relationships, with state-recognized individual and collective rights specially of the indigenous peoples, and nurtured by their sustainable use of the country’s biological resources.
  - Forest Biodiversity: Forest biodiversity sustainably managed for the present and future generations.
  - Pine and Mossy Forest: A sustainably managed pine and mossy forest resources providing benefits consistent with ecological stability for socio-economic well being.
  - Grazing and Pastureland: Grazing lands as sustainable source of health and wealth for the empowerment of Filipinos, through Community Based Forest Management (CBFM), corporate and other appropriate tenurial systems.
Workshop 6 – Butuan City – August 18, 2003

- Forest Plantations: Forest plantations having adequate supply of quality raw materials for wood-based industries that is globally competitive, ecologically and economically sustainable for poverty alleviation and in harmony with nature.
- Forestry Investments: Integrated forest-based industry with sustainable source of raw materials producing world-class products with fully secured investments and promoting the welfare of the workers and local communities.

Workshop 7 – Davao City – August 20-21, 2003

- Community Based Forest Management: Improved quality of life of upland communities actively participating in sustainable forest management thru CBFM.
- Criteria and Indicator and Forest Certification: Effective implementation of criteria and indicator for sustainable forest management.

Annex 1 shows the results of the detailed subsectoral workshops results including specific activities, responsible agencies and time table for different courses of actions proposed to be undertaken.

3.5.1 The Forestry Sector Vision and Objectives

A synthesis of the various subsectoral visions revealed some common aspirations among the stakeholders. Among these are the common desire to sustainably manage the watershed and forest resources in a participatory manner for the benefit of the society. There is also the desire to be globally competitive in the forest-based industries particularly in the aspects of forest plantations and forest utilization. Another common vision is the provision of sustainable supply of goods and services for the upliftment of the economic welfare of upland communities. From the above visions, a common vision for the sector has been drawn as follows:

Forestry Sector Vision: A sustainably managed watershed and forest resources providing environmental and economic benefits to society with globally competitive industries contributing to the national economy and upliftment of upland communities’ welfare.

Among the general objectives formulated to pursue this vision are as follows:

- To sustainably manage the watershed/forest by capable institutions with active participation of empowered stakeholders living in harmony with nature.
- To rationalize forest based industries with sustainable sources of raw materials, producing competitive-market products, and actively promoting the well being of workers and people in affected communities.
- To provide globally competitive and excellent forestry education and training in forestry;
- To enhance protective and biodiversity values of forests;
- To Improve the quality of life of upland communities actively participating in sustainable forest management thru CBFM.
- To enhance and improve decision making processes through adoption of improved MIS, a fully relevant M & E, continuing forest resources assessment, forest resources accounting, criteria and indicator and forest certification, etc.
- To enhance forestry institutions effectiveness, efficiency and competence in forest administration forest conservation and management, forest protection, forestry research and forestry extension;
To enhance policy situation that would endeavor to provide the right environment for sustainable forest management.

### 3.5.2 Strategic Targets

Among the strategic targets envisioned to set the sector in the right track are as follows:

- A fully responsive and capable PFA (public forest administration) within 10 years
- Forestry and related policies harmonized within 5 years
- Poverty in the uplands minimized to half within 15 years
- All forestland boundaries defined and marked, production and protection forests identified, surveyed and segregated within 10 years
- All forest lands under sustainable management and capable managers, all open access areas closed within 12 years
- A healthy, vigorous and responsible forest-based industries within 5 years
- Productive collaboration among DENR, LGUs and other watershed stakeholders, a responsible community of forest stakeholders participating in forestry development and management within 5 years
- All Regions starting to implement sustainable forestry within 1-5 years
- Sustainable production of clean water from watersheds, 150 watersheds prioritized within 2 years, all priority watersheds with integrated plans and management body within 5 years
- 1.5 million of residual forests under sustainable management, self sufficiency in wood 10 years,
- Permanent grazing land of at least 300,000 ha intensively and sustainably managed by 2010 onwards
- 460,000 ha of commercial forest plantations established within appropriate areas including CBFM projects, maintained and renewed within 12 years

### 3.5.3 Programs and Actions

#### 3.5.3.1 Proposed Policy and legislations

- A comprehensive and legislated national forestry policy, harmonized with other relevant policies on land, water, decentralization, rights of indigenous people and so on;
- A fully harmonised set of laws, rules, and regulations in the form of a Forestry Manual; Legislation of the Revised MPFD, adoption by Philippine Cabinet and NEDA;
- Legislation of a PFA as a line agency, reorientation of its function as: firstly, a land management agency and secondly, a forest resource management agency;
- Legislation of CBFM Special Account
- Creation of a National Council on Sustainable Forestry
- Creation of Forest Industries Development Board to oversee rationalization and development of FBI,
- Separation of authority and enterprise function of PFA, creation of National Forestry Board to oversee enterprise functions in forestry

#### 3.5.3.2 Strategic Priority Programs

The following programs shall be pursued as prioritized:

1) Policy Reforms and Institutions Development
   - harmonization of forest other policies affecting the sector
- retrofitting the PFA as a line agency, and as: firstly, a land management agency and secondly, a forest resources management agency, separation of the authority and enterprise functions of the PFA
- capacitation of forestry institutions, institutional reforms
- National Council for Sustainable Forestry (NCSF)

2) Prioritization/watershed integrated land use planning simultaneous with forest boundary delineation
3) MIS, IEC and R & D enhancement
4) Sustainable management of residual forests, other natural forests, arresting forest destruction
5) Forest area expansion through plantation development, ANR, other means
6) Biodiversity and environmental programs
7) Forest industries rationalization and development
8) Sustainable management of grazing lands
9) Full development of M & E and C & I system for all forest types and management systems
10) CBFM as a cross cutting strategy in all forest management systems
    - enhancement of CBFM implementation
    - CBFM expansion, strengthening and expansion of existing sites, identification of new sites

Among the other strategic programs to be pursued are as follows:

- Strengthening and capability building of present and future watershed managers
- Control of deforestation, forest degradation and illegal activities in all forestlands;
- Resource creation through establishment of commercial forest plantations both in public and private lands; resource generation through appropriate market-based instruments, e.g., forest users fees, formulation, piloting and institutionalization of plough back mechanisms;
- Sustainable management of natural forests involving inventory, management plans, appropriate silvicultural regimes, etc.
- Minimization of wastes in forest utilization, value addition on forest resources both wood and non-wood;
- Carrying out institutional reforms including meaningful and democratic decentralization;
- Integration strong and appropriate social and institutional components in all forestry programs, e.g., poverty alleviation, sustainable upland population, gender programs, etc., observing proper interface with other relevant programs
- Promotion of participatory/adaptive forest resources management, devolution of watershed to capable LGUs or organizations, e.g., model forest experience, eco-governance experience;
- Promotion of more pro-active forestry R & D, formulation of innovative financing strategies for R & D, participatory research involving communities and other stakeholders;
- Institutionalization of other decision support systems and tools, regional MIS, Regional Wood Balance Model as integral part of regional MIS, institutionalization of FRA/CFI, Natural Resource Accounting, etc.;
4.0 INTEGRATED SECTORAL PROGRAMS OF REVISED MPFD

The integrated sectoral plan represents the subsectoral programs formulated in the course of subsectoral consultations. The level of details is quite prominent and specific activities may either directly support the priority programs or may be done as a consequence of doing the priority programs. Nevertheless, the specific discussions are expected to help the sector translate the broad plans into specific operational plans. As the Regional offices are expected to realign with the strategic plans, the ensuing discussions provides field level decision makers to deeply appreciate the finer focus of the priority programs.

4.1. Policy and Institutional Development

Problems/constraints/issues provide opportunities for action. The actions required to address the range of problems/constraints/issues listed earlier will be based, among others, on the need for improving the overall performance of the sector. Many of the problems/constraints/issues in the forestry sector of Philippines can be addressed within the provisions of the existing policies, of which there are several. PD 705 and its amendments, RA 8371 dealing with policy on the rights of indigenous people, NIPAS Law, EO 263 on CBFM strategy, and a host of others. Since these policies are not adequately harmonized, there are several contradictory provisions, which invite conflicts. Currently, there are few on-going parallel efforts to rectify and improve the policy situation – PFP 2001, DENR Shell, EcoGov project, and ADB/FINNIDA/NZ suggestions, among others.

4.1.1 A Framework for Forest Policy Development in the Philippines

The purpose of revised MPFD is not to propose an alternative national forest policy for Philippines, but only to provide a reference framework for improving or modifying the policy, if and when the need or occasion arises. Among the basic policy focuses identified for the sector are as follows: controlling deforestation; introducing scientific and sustainable management of forest resources; undertaking intensively managed forest plantations as an investment enterprise; practising appropriate, integrated landuse for improving overall sustainable biological productivity; reducing wastages in harvesting and processing of forest products; controlling illegal activities in forests; rationally restructuring forest-based industry as an economic undertaking and improving their economic efficiency; adequately capturing rent on forest resources; establishing a system of forest resources accounting; strengthening/intensifying forestry and forest products research; arresting ecological degradation and erosion of bio-diversity; rehabilitating wildlife and wildlife habitat; improving essential infrastructure for forest resource development; meaningfully involving people, private sector and NGOs in the development of forestry sector; effectively introducing democratic decentralisation; appropriately restructuring the forest sector institutions to be capable of serving as effective agents for promoting sectoral growth; improving, qualitatively and quantitatively, human resource for forestry in terms of training and education facilities, incentives etc.; ensuring multi-disciplinary approach and inter-sectoral co-ordination in forestry matters.

4.1.2 Scope of National Forest Policy

There are different types of policies following a hierarchy - national policies, regional policies, sectoral policies. Various policy levels are to be closely linked and free from conflicts. While broad national policies tend to be in the nature of manifestos, the sectoral/sub-sectoral policies are normally more detailed and of a portfolio type.

Forestry has evolved into a web of inter-related activities that goes far beyond the limits of forest land, and affects the welfare of every one economically and ecologically. A serious concern is how forest can be managed to retain their essential roles as part of natural resource systems, while maintaining their
capacity for supporting people. Development is a major consideration in today's society and forest policies should serve as agents and facilitators of change. Thus a national forest policy is now seen as a formal and comprehensive statement which provides a conceptual framework, and clear objectives, for forestry development as well as orientation for the choice and execution of forestry programmes and related activities. It sets standards for decision making and discourages acts of expediency. Policy development, implementation and evaluation are more or less a continuous process and closely related to the corporate planning process.

In a board sense forest policy should be considered as a dynamic system, defined by policy environment (such as constitutional framework; influence of geographic, ecological, economic, social and cultural factors; national priorities and commitment; policies of other related/relevant sectors) and interacting with legislation, institutions, programme implementation and their impacts.

4.1.3 Policy Imperatives

In the context of Philippine forestry sector policies, three imperatives are suggested among which are as follows:

- **Sustainability** – The primary goal of sustainable development is to achieve a reasonable and equitably distributed level of economic well-being that can be perpetuated continually for many human generations. It requires that the allocation of resources to meet the needs of present generation should not prejudice the interests of future generations. Current activities may be qualified as sustainable if they do not reduce the productive potential of the asset base and the set of opportunities open to future generations. Sustainability subsumes productivity (growth) and equity (World Bank 1992). From a policy point of view, sustainability is not an option; it is an imperative.

- **Efficiency** - As a renewable resource essential for meeting human needs of goods and services, an important function of the forests is production of goods and services. Efficiency in production implies improving productivity, reducing wastes and indirect costs, and thus registering higher economic rate of return in comparison with other alternatives. Areas set apart for production of timber and other products must be able to compete with other potential land uses - in economic, if not financial, terms. The same criteria should also apply to investments in other commercial forestry activities, as well as in processing of forest products.

- **Peoples Participation** - Participation of people is both an objective and means of development. It is crucial in charting the course of forestry development in the right direction, and in ensuring its sustainability. The philosophy of a 'people-oriented' development from below assumes that participation is not only a fundamental precondition for, and a tool of, any successful development strategy, but also is an end in itself. The unity of participation, both as means and end, should be implicit in development policies. Forestry should be able to facilitate, and benefit from, people's participation in all facets and aspects of forestry. The tenor of social equity built into the Constitution of the country seeks to give emphasis to the participation of all sections of society, in the processes and benefits of development.

4.1.4 Policy Objectives

Forest policy objectives spell out what the sector aims to achieve in contribution to the lofty objectives of the Constitution and other major national policies and how that contribution will be sustained. The long term goal of the National Forest Policy of Philippines should be to enhance the contribution of the forestry sector to the country's ecology and economy.

The following are the proposed specific forest policy objectives:
To effectively conserve, develop and manage the forest resources of the country, as a renewable national asset.

To protect the all forest land resources against all forms degradation and unwise use.

To protect wild flora and fauna, conserve ecosystems, preserve bio-diversity, maintain essential ecological processes and improve the environmental services of forests.

To promote efficient harvesting, processing, and utilization of forest products, in order to obtain increased net benefit/profit/rent or return on investment, and promote forest-based economic growth.

To provide increased socio-economic benefits to the people of the country by contributing to: the basic needs of families, poverty alleviation, employment creation, income generation and better living conditions, and by supporting agricultural/pastoral and rural development.

To develop and support a net work of appropriate and suitably linked and coordinated institutions at different levels, each with its specific institutional policy and mission, legal instruments and financing mechanisms.

To facilitate human resource development for forestry in qualitative and quantitative terms, including education, training and improvement of skills and capabilities.

To promote and support goal-oriented forestry and forest products research, and improve research capability and utility.

To establish an effective system of forestry extension for disseminating new and improved technology, research information and knowledge.

To establish an adequate and effective mechanism of co-ordination/co-operation with other sectors of Philippine economy having influence on forestry, and also with international agencies and institutions concerned with forestry development.

To institute and institutionalize a system for regularly reviewing and updating the forest resource situation in the country, assessing the need for changes in policies and priorities and reporting the results periodically to the appropriate national/government body.

To establish an effective system of M&E to ensure that the proposed policy measures are properly implemented.

### 4.1.5 Strategic Policy Measures

#### 4.1.5.1 Forest Land Use and Management

Forestry has to prove its comparative merits in terms of costs and benefits. It has to be efficient. It has to produce acceptable returns on investment in terms of socio-economic and environmental benefits. For that, forest production has to be linked to end-uses.

It is proposed that ownership of forests be clearly defined. The policy to retain under forest a sufficient area of land (permanent forest estate) to meet the country’s needs for forest products and to protect the environment must be better understood and accepted. The term ‘private forest’, for the purpose of the policy, is used to mean forests and groups of trees, with or without under-growths/crops, raised and managed on privately-owned/occupied land. On functional basis, the forests can be distinguished as: production, protection and conservation. This classification seeks to promote appropriate land use for increased productivity and improved conservation.

*Actions to implement policy measures*

- Forest land settlement and boundary demarcation be undertaken and completed expeditiously including division of the area into grids, and mapping.
• Forests/forest lands be classified, based on its main function, as production forest, protection forest and conservation forest.

• Based on the current socio-economic realities, land under forestry be put to such uses, commensurate with its capability, where it will produce most and deteriorate least.

• The natural forests in the country be protected as a national asset against all forms of misuse, and managed sustainably and scientifically in an integrated manner for maximising/enhancing overall benefits, both economic and environmental.

4.1.5.2 Forest Resource Expansion

*Actions to implement policy measures*

• Area under forest and tree cover be expanded through afforestation/reforestation with appropriate species (from the point of view of site factors, utilization needs and profitability criteria) in available bare (non-forest) lands, degraded lands, deforested areas and marginal lands. A general framework plan and specific operational plantation establishment and management plans must be formulated to guide the sector in forest resource expansion.

• Tree planting be further extended to farm lands, grazing lands, recreation areas, margins of roads and railways, as well as peri-urban lands.

• Establish demonstration plantations of adequate extent and in different locations, which can be linked with research activities.

• Emphasize improved productivity; emphasize effective area and not nominal are; emphasise on cost per unit of output and not per nominal unit area.

• Set up training facilities for plantation and nursery technicians and workers which should also include the use of mechanical equipment.

• Encouragement and support be provided for expansion and/or improvement of social/community/agro forestry, farm forestry, village wood-lots, and private forestry through adequate extension and appropriate incentives.

• Existing forests be protected and maintained through control of deforestation and conversion of forest lands to non-forest uses.

• Along with promoting rational use of forest lands, the misconception of forestry as a residual land-use be combated and removed; and forestry be brought to a status of appropriate and efficient use on its own right and importance.

4.1.5.3 Improvement of Productivity

*Actions to implement policy measures*

• Productivity of forests/forest lands be increased in terms of volume and value of wood and non-wood products, consistent with environmental standards, as a sound basis for long-term national development.

• Multi-product, multiple-use and intensive agro-forestry combinations be promoted in rural areas/villages to improve economic benefits of forestry.

• In all tree plantation ventures, the approach adopted (to the extent feasible), be ‘high-input and high-output' forestry, in a system of integrated land use for producing wood and non-wood products.
• Considering the importance of non-wood resources for medicines, food, fiber, fodder etc., due emphasis be given for their management (including improvement and propagation) and utilization.

• The level of sustainability of forestry production be raised by upgrading technology (including silvicultural manipulation of species, rotation, tending schedules, stand improvement operations etc.), along with infrastructure and institutions.

4.1.5.4 Management Planning

Actions to implement policy measures

• Periodical forest inventory and resource studies/bio-prospecting be carried out, as essential input for management planning.

• All forests/forest lands of Philippines be properly and sustainably managed to meet local and national needs for forest goods and services, to provide income and employment to the rural population and to support environment and development in a harmonised manner.

• All forest management units be covered by long-term management plans (broken down by shorter periods, if necessary), which give due consideration for technical, financial, economic, social, cultural, institutional and managerial aspects.

• Management prescriptions be regularly reviewed and improved based on studies, research, and acquisition of information and technology, thereby helping to increase the level of sustainable yield from the existing and the newly created resource base.

• Wherever feasible, integrated and multipurpose management be adopted in preference to single purpose mono-culture.

4.1.5.5 Promotion of People’s Participation

Actions to implement policy measures

• Support, stimulation, and encouragement be given for participation (of people, private sector, local groups, NGOs) in growing and managing forests/trees in village lands, homesteads, farms and private lands through extension, technical assistance, delivery of inputs, market facilities, provision of credit etc.

• To the extent feasible, and as appropriate, people’s participation be facilitated and promoted in the management of forests though arrangements suitable for specific situations and adequate incentives.

• Wherever feasible, forestry development activities be taken up as joint effort of stakeholders under mutually agreeable terms and conditions.

4.1.5.6 Enhancing Protection Functions of Forests

Actions to implement policy measures

• Forests in critical areas such as steep slopes and fragile watersheds be defined, designated, and demarcated as protection forests, and accordingly given special attention.

• Restrictions be imposed on harvesting of products from forest lands, falling beyond a specified degree of slope, which may vary for different soil and ecological types.

• Forests performing a protection function (fully or partly) be assigned an ‘existence value’ to be considered as a cost while evaluating feasibility of projects requiring clearance of forest lands.
4.1.5.7 Tree Planting for Protection and Land Rehabilitation

*Actions to implement policy measures*

- A protective function be included to the multi-purpose forest plantations, wherever it is warranted.
- Planting of trees on an adequate scale be incorporated as part of integrated watershed management, along with improved agricultural/grazing practices and soil conservation measures.
- The role of trees and shrubs, especially those capable of enriching soil be given proper emphasis in rehabilitating productivity of agricultural/pasture lands.
- Tree planting be made an important ingredient in measures of reclaiming degraded lands.
- Protection forests and protective plantings be managed, under the prescriptions of properly prepared management plans.

4.1.5.8 Forest Protection Measures

*Actions to implement policy measures*

- Effective measures be taken to protect the forest lands against new encroachments, shifting cultivation and illicit logging/harvesting.
- In respect of all areas under forest cover (public, private or under lease tenure), the managers be required to protect the resource by controlling the incidence of fire, by regulating grazing and by controlling pests and diseases.
- Effective measures be taken for prevention, early detection and rapid extinction of forest fires.
- In areas of intensive forest landuse for tree plantations and agro-forestry, appropriate soil conservation measures be undertaken.
- Promote income and employment opportunities, which are not damaging of the environment.
- Support and participation of local communities be sought for effective protection of the forest resource of the country.

4.1.6 Environmental Conservation

4.1.6.1 Protected Area System Management

*Actions to implement policy measures*

- The areas currently set apart as protected areas be assessed with regard to their ecological importance and effectiveness/adequacy and be clearly demarcated, maintained and managed, based on definite management plans, with a view to achieve effective conservation of wild life, bio-diversity, eco-systems and the country's natural heritage, and to ensure environmental stability.(The plans will indicate activities which are allowed/prohibited in the designated areas).
- The issue of whether there is need for establishing additional PAs for adequately representing all ecoregions may be reviewed and suitable action taken.
- Management of the natural forests adjoining the protected areas be undertaken with due consideration of their conservation role; buffer zones of appropriate extent be developed to improve the effectiveness of the protected areas; and protected areas be linked with corridors wherever appropriate and feasible.
• In addition to in-situ measures of protecting genetic resources and their diversity, deliberate ex-situ measures be adopted for ensuring long term survival of these resources.
• Participation of local communities, conservation groups, private sector and NGOs be facilitated and promoted as appropriate, to improve the effectiveness of environmental conservation; a system of advisory committees at the national, and local levels, and honorary wildlife wardens to cover wildlife areas outside the forests, be established for the purpose.

4.1.6.2 Improving Environmental Conservation

Actions to implement policy measures
• Consideration of environmental soundness, through assessment of impacts, should be made incumbent in all forest and forest industry management plans.
• Apart from the economic and industrial plantations, a programme of tree planting should be promoted on a voluntary basis for environmental amelioration (i.e. for carbon assimilation, greenery and scenic beauty, protection of vulnerable lands, improvement of urban environment).
• Pollutants harmful to, and other agents causing destruction of, forest vegetation should be controlled.
• Reduction in the use of biomass fuel through improved stoves/equipment will help to improve environment.
• Improved logging, and consequent increase in yield can help to reduce the area of harvest. Improved recovery in processing industries will also have similar effect.
• Increasing the life of products though seasoning and preservative treatment of wood will reduce replacement needs, thus indirectly reducing wood consumption.
• Along with reduction of waste in logging and processing, it is necessary to introduce waste management systems.
• Reduction of solid wood consumption through popularisation of composite wood products is another means of reducing wood consumption.
• Special protection measures for rare and fragile ecosystems, and endemic and endangered species should be undertaken, to re-inforce their conservation.
• EIA of development projects and incorporating concerns for environmental stability should be made obligatory.
• In establishing a system of environmental pricing, whether it be through pricing of raw materials or finished products, the principle of "polluter pays" should be adopted. It is also necessary to have pollution standards for all activities causing pollution.
• As explained in an earlier section, the real benefit of economic growth and real cost of natural resources loss should be reflected, to the extent possible, in the national accounts. A clear understanding of the values involved will help to have a better environmental awareness.
• It is necessary to establish safe minimum standards of conservation for all major development activities. Safe minimum standard as a concept provides a socially determined demarcation between moral imperatives to preserve and enhance natural resource systems, and the free play of resource trade-offs.
• A system of incentives be established for conservation-oriented activities.
4.1.6.3 Environmental Conservation and Income Generation

Actions to implement policy measures

- Income generation (and employment) possibilities of conservation areas be exploited through non-damaging activities/uses such as eco-tourism, wildlife tourism, dedication of areas for international research, buffer zone management, and collection and supply of NWFPs and genetic materials.
- Wildlife farming be promoted as a source of income and trade, primarily to benefit local communities.
- Visitor facilities be improved appropriately in areas of tourism potential.

4.1.7 Enhancing Socio-Economic Contributions of Forestry

Actions to implement policy measures

- Considering the importance of wood fuel as an important source of rural/household energy, efforts be made to improve fuelwood availability, wherever it is essentially needed.
- Use of improved wood-burning stoves be promoted for reducing fuelwood consumption and to help reduce expenditure on rural/domestic energy consumption.
- In collaboration with other sectoral institutions (e.g. health, education, agriculture) steps be taken to improve the welfare of those who live in and around forest areas, or engaged in rural forestry activities.
- Forestry activities which will support poverty alleviation, generate employment, increase income and raise the standard of living of the population, especially in rural communities be promoted.
- Self-reliance of the communities, and their household income and welfare security be activity promoted, since the old concept of providing rights for meeting basic subsistence needs from forest areas is no longer feasible or appropriate in most situations.
- Considering that community groups and private entrepreneurs will be involved in production forestry, proper pricing and commercialisation of forest products be supported, to provide just and remunerative prices, and resulting incentive to the grower.
- Technology with a rational blend of modern and appropriate be followed in the forestry sector in order to support socio-economic development of rural communities through additional employment, income and people’s participation.
- Considering the vital service that the processing and trade of forestry products can provide for economic growth and development, forestry-based growth centres be developed in different parts of the country, suitably linking raw material supply, processing and marketing.
- Women, disadvantaged groups, cultural communities, local people, private operators and NGOs be involved appropriately by providing them stakes in the operation of forestry development programmes.
- Entrepreneurship in fields relevant to forestry development be promoted and stimulated, through facilitating effective people’s participation.
- Traditional rights be recognized and respected without prejudice to the development needs of the country.
4.1.8 Incentives for Communities and Stakeholders Participation

*Actions to implement policy Measures*

- Design a rational and healthy incentive package to support forestry development with participation of all interested parties.
- Minimise the use of direct financial incentives to avoid distortionary effect; in unavoidable cases use them in a controlled manner.
- Remove regulatory constraints affecting movement of forest produces and development of private forestry.
- Disseminate vital information, particularly market information, and facilitate market access; ensure remunerative prices to producers.
- Ensure stability and reliability of forest products supply to processing industries.
- Ensure tenure security to forest dwellers and communities; establish a system of benefit-sharing with participating parties/people.

4.1.9 Institutional Arrangements

The review of institutional arrangements strongly indicated the urgent necessity for institutional restructuring and changes in management concepts and approaches. Central to the institutional arrangements is the sectorial organisations including their structure, linkages and roles. All the institutions/organisations are to be legally defined, consistent with policy. Organisations in a sector consist of those representing public (government) and private (including corporate, co-operative, group and individual) interest. Government agencies are normally concerned with public administration and regulation of sectoral activities.

In all the sectors of national economy, the functions of institutions fall under two groups: *authority* and *enterprise*. While the authority function (i.e. enforcement of rules and regulations) is to be assigned to government institutions/agencies, the enterprise function (i.e. activities related to socio-economic development) can be assigned to private, public, co-operative or joint sector institutions. The institutional system thus provides an orderly structure of related components that channel the efforts of people towards pre-determined objectives.

4.1.10 Organizational Restructuring

The weaknesses of the sectoral institutions and its implication on forestry development be addressed in the following way: Separate the authority (enforcement of policy, laws, rules and regulations) and enterprise (planning and implementation of development programmes) functions relating to forestry, leaving authority function to a Government agency and its decentralised structure, and enterprise function (including forest programmes, wood industry, PAs, research etc.) under a separate autonomous structure to be called a National Forestry Board or National CBFM Board or a National Forestry Commission or a National Forestry Trust. This separation of functions will help to promote efficiency, accountability and professionalism.

The autonomous enterprise system can be structured differently. An enterprise is a neutral term meaning one or more units/firms under common ownership or control. It could be under public, private, cooperative or joint sectors. The enterprise system can also incorporate private and co-operative sectors and organised people’s participation. The existing CBFM system can be suitably modified to fit into such a system effectively. One possibility is to have a 3-tier system with appropriate linkages:
i. A fully autonomous national forestry board/commission/trust;

ii. A number of functionally autonomous enterprises serving under the overall guidance of the board/commission/trust. These enterprises can be defined geographically (Sitos, Barangays, Provinces, Regions) and in some cases by nature of activity (research, eco-tourism).

iii. A number of operationally autonomous production/service units under each of the enterprises. Peoples participation directly at the unit level (and also through representatives at higher levels) can be facilitated through appropriate arrangements.

All entities in the structure will be covered by proper legal instruments. It will also be a requirement that the system employ adequate number of qualified professionals and technicians to manage the forestry enterprises.

**Actions to implement policy measures**

- Peoples participation be sought and mobilised for environmental conservation, forest protection and sustainable forest production.

- Recognizing the enormity of the task involved in developing the forestry sector, active participation of private sector, co-operative sector, membership organisations/local organisations, farmers, homesteaders and local people and NGOs with proven development delivery capability be encouraged and facilitated, through flexible institutional arrangements, mechanisms and incentives.

- Special support be provided, and special programmes designed to promote participation of women in forestry production activities.

- Industrial units be encouraged to have captive source of raw material - either as intensively managed plantations on lease from government or preferably through raw material supply agreement(s) with an entity(s) involved in wood production.

- Re-structuring of sectoral institutions and related changes in the policy instruments, be carried out expeditiously and kept dynamic through innovative means.

- In respect of administration and management of government forests, the present system be modified by suitably separating the authority and enterprise functions.

- The enterprise development in the forestry sector (including development and management of forests, wildlife and forest-based economic activities/services and environmental conservation) be organised under a hierarchical system of autonomous and self-financed enterprises, to promote a participatory approach to development.

- Responsibility for overseeing the sector and enforcing of government policies, legal enactments and regulations related to forestry and wildlife conservation be vested with an appropriate government agency.

### 4.1.11 Changes in Laws, Rules and Regulations

**Actions to implement policy measures**

- Forest laws, rules and regulations be reviewed and revised to be in tune with the emerging needs, such that they will act as an instrument facilitating forestry sector development.
• Forest laws, rules and regulations be made simple in procedures, people-friendly, quick in decisions and balanced in its penal and incentive provisions.

• The commitments of the country with regard to international conventions be suitably reflected in the laws, rules and regulations.

4.1.12 Investment and Financial Matters

Currently, the investment situation in the forestry sector is discouraging and indicates a negative net investment. Mobilization of investment funds locally is very important in meeting at least part of future investment needs. And, in order to attract private sector participation it is necessary to provide investment profiles of suitable projects with relevant information and analysis. It is also necessary to have a balanced combination of funding sources to ensure stability of fund flow. To avoid the fluctuations and to facilitate targeted funding for forestry, it will be useful to establish a National Forest Fund.

It is necessary here, to recollect the implications of the system of accounting on natural resources, particularly on forests. Following the efforts in various quarters to modify the accounting for natural resources, the last (1993) SNA has incorporated environmental accounting in a satellite accounting framework - i.e. the System of Environmental Economic Account. Non-consumptive uses and unpriced values can now be taken into account through a system of satellite analysis using methods such as shadow pricing, contingent valuation, hedonic pricing, questionnaire surveys etc.

Actions to implement policy measures

• Through removal of administrative and other constraints, an appropriate business environment be created in the forestry sector, for attracting investment.

• Credit procedures and security norms be made simple and less restrictive to facilitate development of forest production and forest-based processing, by the people.

• Adequate return on investment be the main criteria for promoting investment in forestry.

• Participation of public and private sectors, co-operatives, local organisations and groups be stimulated in order to achieve and maintain an increased level of investment in forestry and forest industry.

• Existing financial rules, controls and regulations be improved and appropriate financial means and mechanism be established/expanded, to support the small investors in forestry.

• Proper pricing of forest products, including the proportional cost of environmental conservation be ensured, and hidden subsidies through under-pricing be avoided.

4.1.13 Inter-Sectoral Co-ordination

Actions to implement policy measures

• Co-ordination of programmes and programme activities of the forestry sector, with those of other sectors of the national economy, be enhanced and strengthened, to avoid conflicts and to ensure mutually beneficial development.

• Ensure compatibility of sectoral objectives and missions.

• Periodical consultations/reviews/discussions/inter-agency meetings.

• Collective or common programmes.

• Multi-disciplinary team work.

• Incentives for undertaking co-ordinated programmes.

• Inter-sectoral task forces for ironing out differences.
• Consensus in areas of common interest.
• Resolving conflicts within the sector/sectoral institutions.
• Co-ordination committees at various levels.

4.1.14 Information, Education and Communication, and Training

4.1.14.1 Strategies for Education and Training

• Rationalization of the forestry educational system by identifying one national forestry college and one college each in the regions.
• Establishment of a strong association of forestry schools and colleges in the pursuit of high standards of education and contribution to forestry development through the school’s research, extension and public service activities.
• Development of the faculty of forestry schools and colleges through a vigorous human resources development program.
• Development of facilities of educational institutions that include laboratories and equipment, libraries and infrastructures to enable them to provide high standards of education and training to students.
• Recruitment of quality students to train for a career in forestry and provision of scholarships and other financial assistance for their studies.
• Strengthening professional associations such as the Society of Filipino Foresters in their role of providing ethical standards for their members and becoming a vehicle for technology transfer.
• Regular updating of the forestry curriculum to respond to changing needs in the forestry sector.
• Develop strong linkages between forestry educational institutions and employers and among training and research institutions.
• Develop integrated training plans.
• Strengthen core of trainers in the DENR and other institutions involved in the forestry sector.
• Improve DENR training facilities and Intensify resource generation

4.1.14.2 Extension and Communication

• Simplification and deregulation of forestry policies
• Development of an integrated IEC plan
• Development/ improvement of the forest resources data base
• Develop strong linkages with NGOs, LGUs, POs and other national and local advocacy groups
• Training of field staff particularly in reorienting them to their new role as service provider to various forestry stakeholders
• Delivery of support services to different stakeholders, such as information on recent forest policies, laws, rules and regulations; technical advice, marketing assistance and others
• Strengthening of the public information program on forestry and the environment using different kinds of media
• Strengthening the Public Affairs Office (PAO) and the Regional PAO within DENR as a body that coordinates information and communication components of various forestry programs
4.1.14.3 Program Components

4.1.14.3.1 Strengthen Forestry Extension and Communication

- Improve the credibility of forestry institutions
- Develop linkages with national and local advocacy groups
- Develop forestry resources database
- Formulate an integrated IEC plan
- Development of IEC Materials
- Web Advocacy
- Implementation of Extension and Communication Activities

4.1.14.3.2 Strengthen and Rationalize Manpower Training

- Develop an integrated training plan
- Strengthen linkages with other training institutions, LGUs, NGOs, academe and research institutions for implementing the training plan
- Strengthen core of trainers in the DENR
- Develop trainers/ service providers within identified partner organizations
- Develop existing training facilities
- Develop training modules and implement training programs

4.1.14.3.3 Improve the Quality of Forestry Education

- Rationalize the forestry schools
- Institutionalize a recruitment and screening process for forestry students and provide financial assistance to students
- Improve curriculum through closer linkages among the academe, DENR, LGUs, private companies and other professional groups
- Faculty development and upgrading of facilities

4.1.15 Monitoring and Evaluation, Communications

The following recommendations are envisioned to provide the process of retrofitting the PFA towards successful guidance in the implementation of the revised MPFD particularly in the aspects of effective M & E system and communications.

4.1.15.1 FMB as a land management agency

- Issuance of DAO declaring and clarifying the management philosophy recommended
  - Compliance of the DENR for the inventory and characterization of the forest resources for the Rural Development Logical Framework.
  - Delineation of the forestlands
  - Sustaining implementation of the WEM Framework of the DENR
  - Use of the Grid/GIS
  - Facilitate MIS and Decision Support System
4.1.15.2 **FMB reverts as a line agency, draft bill**

- Lobbying for the recommendation
- Public involvement or advocacy for the recommendation

4.1.15.3 **Formulation of information needs of the forestry sector**

- FMB takes the lead, issuance of DAO creating a Task Force (TF) to determine the hierarchy of information needs for the internal and external audiences
- Strengthen present interchange of forestry sector information

4.1.15.4 **Formulation of criteria and indicators for sustainable forest management**

- C & I for other forest types (e.g., pines, pasture, mangrove)
- Training on C & I formulation and implementation of sustainable forest management of FMB and DENR offices concerned

4.1.15.5 **Institutionalization of Management Information System (MIS) and Decision Support System in the FMB and the DENR**

- Issuance of DAO assigning PPSO, DENR and the C&I Unit or the Economics Division of the FMB to implement the recommendation
- Retrofit all FMB and DENR staff/units doing data collection and analysis for MIS and Decision Support System
4.2 Programs on Watershed and Forest Management

4.2.1 Watershed Management Component of the Revised MPFD

4.2.1.1 Objectives

The general objective of this component is to promote the sustainability of watershed resources and its ability to provide key environmental services through an empowered community of watershed stakeholders. Specifically, this component seeks to:

- Promote greater appreciation amongst various watershed stakeholders of the basic concepts and principles governing watershed management;
- Promote greater understanding on the watershed as a system including all the biophysical processes involved in the delivery of basic environmental services and the interaction of biophysical and socioeconomic factors and its influences on the condition of a watershed;
- Facilitate the development and accessibility of enabling tools and mechanisms (such as technology, livelihood opportunities, IEC and training programs, property rights systems and institutional mechanisms) which will enhance the skills and motivation of the stakeholders for lasting and meaningful engagement in watershed management;
- Enhance the development of improved policies consistent with the objective of improving the governance and management of watersheds in the country; and
- Facilitate the rehabilitation and improvement of the conditions of degraded watersheds.

4.2.1.2 Guiding Concepts and Principles

Watershed refers to a topographically delineated area of land from which rainwater can drain as surface run-off, via a specific stream or river system to a common outlet point which may be a dam, irrigation system or municipal/urban water supply take off point, or where the stream/river discharges into a larger river, lake or the sea. On the other hand, watershed resources refer to all the natural resources found inside the watershed. These include soil, water, plants, animals, minerals, and land. The sustainability of one resource is interlinked with the sustainability of the other resources.

Watershed management is defined as the process of guiding and organizing land and other resource uses in a watershed to provide desired goods and services without adversely affecting soil and water resources (PCARRD 1999). It is not limited only to the concerns of soil and water conservation. It involves the planning and implementation of both technical and policy initiatives to realize a set of environmental and socioeconomic objectives.

Watershed stakeholders refer to all individuals or groups with expressed interests in the welfare of a watershed. The key watershed stakeholders include the local communities, LGUs, DENR, DA, DOE and OGAs, NGOs, religious groups, youths, and other members of the civil society.

Watershed actors and players refer to individuals or groups whose actions and decisions bear on the condition of the watershed and its functions and resources. These include among others, the watershed resource users and beneficiaries, watershed managers, policy makers, researchers and technology developers, professional service providers, financing institutions, trainers, educators and information disseminators, and auditors.

Integrated and multiple use management recognizes that a watershed is a self-contained system that normally consists of one or more ecosystems or portions of ecosystems. As a system it contains physical, biological and human components. The sum of the interactions of these various components
determines the behaviors and properties of the watershed. In return, its behaviors and properties affect human activities, climate and the rest of the other watershed components. Watershed is a complex system that responds to almost every alteration in any of its components. It is therefore essential for management to be constantly wary of all the watershed components (resources and processes included), how they interact with each other and how these components individually and collectively influence the performance of a watershed as a system.

Multisectoral and interdisciplinary management refers to the application of inter-disciplinary and multi-sectoral processes in the planning, appraisal, implementation and monitoring of a wide range of development activities. This includes development programs in forestry, agriculture, fisheries, mining, water supplies (for irrigation, livestock and domestic use), energy generation (hydro, geothermal and fossil fuels), and infrastructure development (roads and settlements). Successful watershed management should recognize the multi-dimensional nature of the task. Along with the biophysical dimension, the social, cultural, financial and economic dimensions must be equally considered. While biophysical processes are more natural to the watershed than the other dimensions, the latter can be very influential in determining the state of the watershed.

Sustainable watershed management and development requires the identification, development and dissemination of improved technologies and land management practices that are both productive and conservation effective. This requires that watershed management programs should not be narrowly focused on soil conservation and forest protection alone. Instead, when the biophysical and socio-economic circumstances permit, improved watershed management should promote production-oriented land-use enterprises (e.g., upland farming, grazing, orchards, plantations, tree farms and production forests) managed in such a way as to provide sustainable economic benefits to the land-user, not only for the present but also for future generations.

The Philippine Strategy for Watershed Resource Management defined sustainable development in the context of multiple uses of watershed areas as the management and conservation of a watershed’s natural resource base, and the orientation of technological and institutional change in such a manner as to ensure the present and future security in basic human needs attainment. Such sustainable development (whether for forestry, agriculture, fisheries or power generation) could conserve land, water, plant and animal genetic resources, and is expected to be environmentally non-degrading, technically appropriate, economically viable and socially acceptable.

The use of watershed’s natural resources should be guided by the following general sustainability criteria according to PSIWRM:

- Ecological Sustainability
- Social and Cultural Sustainability
- Economic Sustainability
- Institutional Sustainability
- Political Sustainability

Several specific key criteria and objectives can be used to assess the sustainability of current and future watershed resource-based enterprises, and their component management practices. Individual enterprises or management practices should be assessed according to whether or not they:

- maintain and where possible, enhance the productive capacity of the natural resource base as a whole and the regenerative capacity of renewable resources, without disrupting the
functioning of basic ecological cycles and natural balances, reducing biodiversity, destroying the socio-cultural attributes of rural communities, or causing contamination of the environment.

- maintain the delivery of water in the quantity and quality required for domestic, irrigation and power generation purposes.

- meet the basic welfare requirements (for food, fuel, water and shelter) of present and future generations of on-site watershed resource users, both qualitatively and quantitatively.

- provide durable livelihoods, sufficient income, and decent living and working conditions for all those engaged in using watershed resources for tree, crop, livestock, and/or fish production.

- reduce the vulnerability of those living within, adjacent to, or downstream of the watershed, to adverse natural and socio-economic factors and other risks.

- strengthen self reliance among the users of the watershed’s natural resources.

### 4.2.1.3 Watershed Strategies

To achieve the goal of this plan, the various policies and programs will be aligned along three major strategies, namely: watershed resources rehabilitation and development, watershed resource use improvement, and watershed governance improvement.

- **Watershed resources rehabilitation and development** is intended primarily to improve the ability of the watershed to provide goods and services on a sustained basis.

- **Watershed resource use improvement** is a strategy for transforming the current modes of using land, soil, water and other watershed resources into use patterns that are more conservative and biased toward maintaining sustainability.

- **Watershed governance improvement** is mainly trained on the improvement of the ability and motivation of the various stakeholders to effectively carry out their respective tasks and roles in watershed management.

### 4.2.1.4 Program Components

The various policies and programs will be aligned along three major strategies, namely: watershed resources rehabilitation and development, watershed resource use improvement, and watershed governance improvement. Among the major program components are as follows:

- **Information, Education and Communication**
  - Create heightened awareness and appreciation for the values and functions of the watersheds;
  - Enhance understanding on the watershed and how it functions as a biophysical system;
  - Correct the misconceptions about watershed and watershed management;
  - Facilitate transfer and adoption of conservation effective technologies and practices;
  - Form a pool of individuals with the basic skills in watershed management; and
  - Create staff of capable trainers who can help in the massive dissemination of information, technologies and skills in watershed management.
- **Policy Reform**

The main objective of this component is to create an atmosphere that is conducive for the spontaneous and lasting involvement of the various stakeholders in watershed management for the sustainability of the resources found therein. Specifically it will seek to:

- Remove any policy that discourages direct involvement of stakeholders in watershed management;
- Minimize prescriptions and restrictions;
- Smooth out conflicts among key policies of the government which pertain to the management of watersheds, e.g., CBFM in proclaimed watersheds, IPRA, NIPAS, PD 705, others
- Enhance the complementation among related policies on watershed management;
- Provide incentives to the stakeholders through policies that will promote the development of conservation technologies, viable alternative livelihoods, appropriate property rights system, and institutional mechanisms; and provide adequate technical and financial assistance;
- Enrich and encourage the institution of local policies;
- Promote management of all watersheds including those that are not proclaimed as reserves;
- Promote watershed management that is socially equitable, culturally sensitive and gender aware;
- Promote efficient use of watershed resources;
- Encourage integrated watershed management planning guided by land use suitability, compatibility with local cultural systems and needs and preferences of all key stakeholders;
- Promote coordination and integration of investments on watershed management from all concerned government agencies, LGUs, local communities and other sectors; and
- Encourage the development of formal and civil science related to watershed management by setting aside adequate resources for the conduct of basic and applied researches.

- **Watershed prioritization**

The purpose of this program is to sharpen the focus of investment of limited resources (financial, human and time) for watershed management. This system of prioritization that came with the recognition of the weaknesses of proclaiming watersheds as reserves is based on the following:

- Contain important natural habitat
- High cultural and historical value
- Actual and potential contribution to economy
- Actual and potential contribution to livelihood of poor
- Actual and potential use for energy, irrigation and water supply
- Poses risk of damages from flood and erosion

- **Formation of Management Body**

- DENR launch an IEC program
- facilitate the formation of a multi-sectoral and multi-stakeholder watershed management body
- define functions and responsibilities depending on the preferences and perceptions of its constituents
- coordinate and integrate functions to be able to eliminate the destructive effects of competing and conflicting interests and priorities of multiple watershed stakeholders

- **Institutional Development: Strengthening DENR**
This program addresses the need for some reengineering works at the DENR to enable it to play its new dominant role of being the coordinator, facilitator and technical assistant as it gradually sheds its role as implementor and regulator. Among the works to be done are:

- Reversion of FMB from staff to line bureau is necessary to oversee the national watershed management program.
- Regardless of whether FMB reverts to being a line bureau or not, there is a need for FMB to restructure organizationally to emphasize at least the duality of its focus that is on forest and watershed management if. This will be the consummate action to fully implement DAO 99-01 using the watershed as the unit for forest planning and management.
- Strengthen the ability of FMB to work in alliance with OGAs (like the DA, DAR, DPWH and DOE), LGUs, civil society, business sector and other potential partners in watershed management.

- **Formulation of Land Use Plan and Management Plan**

  Facilitate the formulation of comprehensive watershed management plans based on prioritized watersheds to be formulated and approved by all stakeholders with proper considerations of the following:
  - actual and perceived needs of various stakeholders
  - environmental protection and economic production to realize optimum returns
  - management plan for portion of a watershed must be consistent with that of the main watershed
  - a planning process where all stakeholders are duly represented and actively participated.
  - guided by and referred to the land use plans of the LGUs and sectoral plans of various national line agencies.

- **Development of Watershed Resources Information System**
- **Institution of System for Charging Environmental and Resource Use Fees**

  Among potential schemes for collecting watershed resource use and environmental service fees:
  - Imposing a service charge for maintaining the supply of water to the downstream users so that the managers of upstream areas can be compensated
  - Charging fees on certain products derived from the watershed like raw water and mineral resources
  - User fees levied on people visiting the watershed to enjoy the beauty of wildlife and other natural resources

- **Forest Restoration**
- **Plantation Development**
- **Watershed Monitoring**

  - ensure that the watershed resources are being used according to plans and under sustainable terms;
  - keep track with the state of health, stock, rate of use and replenishment of key watershed resources;
  - protect the watershed functions e.g., streamflow;
  - minimize the adverse impacts of using land and other watershed resources; and
  - check if the objectives of the management plan are being realized.
• Comprehensive Research and Technology Development
  o reinvest in basic research in order to update the current understanding on the watershed behavior, e.g., watershed hydrology, biodiversity, land productivity and other key watershed attributes
  o Hydrologic processes as influenced by climate change and variability, land use and land use practices
  o Upland – lowland interactions
  o Technology development particularly on watershed resource utilization appropriate for various users
  o Institutional development that includes policy studies and development on modes of governance, land and product tenure, institutional arrangements for multi-agency collaboration and local community participation
  o Enhancement of capability for multi-agency, multi-level and multi-objective management and decision-making
  o Development of management decision support systems that will include resource accounting and valuation, management information systems, watershed modeling and simulation
4.2.2 Natural Forest Management

The general objective of natural forest management is to sustain its management for the environmental and economic benefits of Filipinos. Among the specific objectives are as follows:

- Protect the existing natural forests from conversion and destruction;
- Promote sustainable management of natural protection forests;
- Promote sustainable management of natural production forests through appropriate management systems under joint-venture, co-production and production sharing modes;

Among the specific programs for natural forests are as follows:

4.2.2.1 Dipterocarp Forests

- Delineation of permanent dipterocarp forest estates
- Sustained National Forest Inventory
- Promotion of biodiversity in the management of production forests
- Adoption of C & I for sustainable management of natural dipterocarp forests
- Training program/adequate transfer of knowledge and technical know how on the rudiments of sustainable logging
- Establishment of models of timber production systems under joint venture, co-production and production sharing within residual production forests.

4.2.2.2 Mangrove Forests

- Delineation of the mangrove permanent forest estate
- Replication of the Pagbilao GRA to consider other environmental gradients
- Adoption of C & I for management of mangrove forests
- Expansion of the Philippine mangrove areas
- Amendment of RA 7161 to exempt planted mangrove trees from the cutting ban provision.
- Strict implementation of law prohibiting conversion of mangroves into other land uses
- Strengthen policy on reversion of abandoned, undeveloped and unproductive fishponds to mangrove forest estates
- Study and establish appropriate model for CBFM in mangrove forests
- Strengthen IEC on mangrove forests/ecosystems

4.2.2.3 Pine Forests

- Delineation of the pine permanent forest estate
- Institutionalizing an effective and efficient forest fire control and management program
- Pine forest plantations
- Establish Models of Timber Production Sharing Agreement
- C % I for Pine forests
- Review and revised silvicultural system for the pine forests of the Philippines vis a vis NIPAS Act
- Encourage appropriate and indigenous agroforestry practices (oleculture) in the pine forests
4.2.3 Grazing land Management

The general objective of grazing land management is to manage grazing lands as a sustainable source of health and wealth for the Filipinos, through Community Based Forest Management (CBFM), corporate and other appropriate tenurial systems. Among the specific objectives are as follows:

- To identify and set aside appropriate areas as permanent grazing lands to be maintained and sustainably managed as such;
- To improve the carrying capacity and productivity of grazing lands through improved forage and pasture grasses;
- To improve livestocks production through proper management practices and breeding technology;
- To provide security of tenure and incentives to formal grazing land users to improve their range management operation;
- To rationalize land allocation for permanent grazing lands in social, cultural, economic and political development;
- To strengthen GL-MIS, IEC, R&D, networking, linking and other institutional support system.

To put grazing land management in a sustainable context, the following programs shall be pursued:

- Institutional and Technical Aspects
  - Bringing back of the range improvement unit DENRs organizational structure and function at the national, regional and field offices.
  - Training of DENR personnel, especially those in the range management office in the field, along the following subjects: a) forage production and management, b) cattle production and breeding technologies, c) site suitability assessment, d) preparation of grazing management and operations plans, and e) M&E for sustainable grazing land management.
  - Development of mechanisms for DENR-DA collaboration

- Policy Aspects
  - Extension/dialogue of regional offices of DENR with the rancher associations about the intent/scope of DAO 99-36 including the proposed DAO 2003.
  - Establishment of permanent grazing lands to be used for grazing and other forest uses compatible with grazing.

- Biophysical, Social and Financial Aspects
  - Piloting of community-based or co-management approach of grazing land management involving the PO/LGU and the DENR.
  - Coordination between DENR and NCIP especially in resolving ancestral land claims in existing FLGMA areas.
  - Conduct policy and operational research on:
    - Improving the carrying capacity of grazing lands (testing the adaptability of promising forage species; comparing the productivity of rotational versus cut-and-carry grazing system under different grazing conditions; etc.)
- Rehabilitation measures for degraded grazing lands.
- Financial and incentive systems for community-based range management.
- Piloting the grazing land management scheme using multiple-use concept, e.g. silvi-pasture scheme wherein tree plantation development and livestock production can be undertaken simultaneously.
- Determining the best alternative land use option for different classes of cancelled FLGMA areas.
4.2.3 Protected Area Management

PAWB which was created through EO 192 is a signatory to various international agreements and conventions on biodiversity conservation. Among these are: Convention on Biological Diversity, Convention on the Conservation of Migratory Species of Wild Animals and Convention on the International Trade of Endangered Species of Flora and Fauna (CITES), among others. In compliance to the country’s international commitment on biodiversity conservation, many initiatives were already undertaken particularly the proclamation of 93 protected areas under NIPAS, and enactment of 5 protected areas, formulation of National Biodiversity Strategy and Action Plan, and development of databases for Philippine biodiversity, among others. In furtherance of the country’s commitment for biodiversity conservation, the following are programs proposed for funding:

- Establishment of 93 protected areas;
- Delineation and demarcation of 5 protected areas boundaries with congressional enactment;
- Management and development of protected areas;
- Development of ecotourism sites within or outside protected areas;
- Implementation of plant conservation programs; and
- Implementation of market-based instruments in protected areas
4.2.4 Urban Forestry Development and Management

The recommendations below were consolidated from those suggested in the following references: Palijon (1998, 2000, 2001); Ganapin (1993); Ramos (1993); Alba (1993); FMS – NCR/DENR (2001); proposed DAO re– Guidelines governing the implementation of Urban & Suburban Forestry Program; and Memorandum of DENR Secretary to FMB Director dated March 17, 1994 re- Issues/Constraints/Problems and Recommendations on Urban Forestry: These recommendations were presented and validated during the Regional Consultation Workshop held in Cebu City on July 22-23, 2003. Among the plans for this subsector are as follows:

4.2.4.1 Institutional Aspects

- Creation of Urban Forestry Section in the DENR regional offices to spearhead:
  - implementation of specific urban forestry programs and activities;
  - provision of technical assistance to LGUs, OGAs, NGOs, schools, civic and business organizations, etc. on urban forestry;
  - monitoring and evaluation of collaborative urban forestry projects
- Strengthening inter-agency coordination in urban forestry programs through revitalized inter-agency committee
- Strengthen organizational capability of urban forestry units/offices of DENR and LGUs;
- Formulation of a master plan on urban forest development in coordination with LGUs and private sector

4.2.4.2 Social & Political Aspects

- Aggressive information, education and communication campaign (IEC) through tri-media advocacy work and involving the youth sector in implementing UF programs.
- Strict implementation of existing policies, laws and ordinances (political will) against squatting, vandalism, and improper use of mini-forests or parks, plazas, street corridors etc.
- Integrate urban greening in urban land use development planning;
- Mandatory requirement of landscape plan for all government infrastructures such as buildings, roads, flyovers, overpasses, etc.
- Creation of innovative fund generation schemes, e.g., “green taxes” to polluters like motor vehicles which spews CO2 and other toxic gases into the air, creation a Greening Trust Fund for local taxes e.g. certain % of movie tax, parking fee, fines, etc. will be extracted for this fund.

4.2.4.3 Biophysical and Technical Aspects

- Comprehensive inventory and assessment of existing and prospective urban forestry/greening project areas for planning and maintenance purposes;
- Implement the required urban forestry cultural management practices such as species selection, planting stock production, site preparation, plant care & maintenance.
• Coordination with utility and transport services agencies (e.g. Meralco, MWSS, PLDT, DPWH, etc.) regarding their infrastructure development plans and activities to avoid or minimize removal, root growth restriction and damage to trees already planted or those to be planted yet.
• Development and implementation of M&E system for urban forestry programs.

4.2.4.4 Research Support

• Strong research support in UF concerns such as:
  o species-site adaptability;
  o impact of pollutants;
  o best planting combinations and patterns to acquire the most ecological and aesthetic benefits;
  o appropriate tree care & maintenance in an urban setting;
  o inventory of trees and other plants to determine the structure & composition of urban forests/green spaces;
  o environment values of urban forests (e.g. potentials in CO2 sequestration and storage, pollution abatement and biodiversity conservation); and
  o analysis of national policies, local ordinances and urban forestry strategies.

4.2.4.5 Other Recommendations

• Replication of "Oplan Sagip Puno" Program in other DENR regional offices;
• Review/Approval of Proposed DAO re-Implementing Guidelines for Urban & Suburban Forestry Program or USFP

4.3 Programs on Livelihood and Poverty Eradication

Practically, livelihood and poverty eradication is a cross cutting concern of many programs under the revised MPFD that are envisioned to enhance the contribution of the forestry sector in the improvement of national economy and upland communities' welfare. Livelihood generation is a basic consideration in land use planning for watersheds. Programs on forest-based industries also endeavors to serve the cause of upland communities, i.e., establishment of community-based forest industries. Moreover, there are long term programs that seek to empower the communities to make economic decisions. Among them are community-based forest management, forest plantations and sustainable management of residual forests.

4.3.1 Community-Based Forest Management

Being the national strategy in forest resources development and management, the government has already committed considerable resources to make CBFM work. Many headways had been achieved, particularly, putting on the ground, respective CBFM sites and the institutional mechanisms for program adoption and operationalization and a broad-based acceptance of the program among different sectors. At this point, there is no turning back or looking the other way around. Instead, it is prudent upon this government to continue with this program with much vigor, build-up on its initial gains and further strengthen the program in view of so many lessons learned in its initial stages and in view of our global commitment to make this part of the globe a better place to live.
4.3.1.1 Program Objectives

The general objective of the CBFM programs is to sustainably manage forest resources towards the upliftment of socio-economic condition of forest based communities and enhance the quality of environment for the benefit of society. Among the specific objectives are as follows:

- To enhance and strengthen the implementation of CBFM program through appropriate policy and institutional support systems;
- To expand CBFM coverage to cover existing open access areas;
- To improve the quality of life of the forest-based communities by enhancing CBFM benefits thru sustainable and globally competitive programs; and,
- To rehabilitate, protect, manage, conserve and develop denuded forest lands thru CBFM.

Among the plans for CBFM are as follows:

- **Enabling Conditions/Policy Programs and Actions**
  - Integration of all relevant CBFM guidelines pursuant to EO 263 and other relevant laws, into one mother guideline, hence, only one guideline for CBFM. This would entail reiteration of relevant provisions of existing guidelines and amendment of old guidelines with outdated and impractical provisions.
  - Development of a handy and laymanized CBFM information kit or manual for use of DENR field men, people’s organizations, LGUs, and relevant stakeholders. The manual will contain a handy and simplified manual of procedures, particularly on regulatory procedures from ECC, RUP, resource inventory, timber harvesting, processing and transport.
  - Enactment into law the establishment a CBFM Special Account.

- **Operational Management**
  - CBFM area expansion to at least 9.0 million ha is targeted within the next 7 years (until 2010). Target areas are the expiring TLAs, expiring PLAs, and other open access areas. This strategy will help close the so many open access areas in our forest lands.
  - Ground delineation of CBFM areas. Project boundaries define the limits of activities that may be done in particular CBFM sites.

- **Institutional Initiatives**
  - Strengthening of DENR capability to implement CBFM that would entail both structural and personnel development and recruitment. Structural strengthening would require assessment of the needs for CBFM field personnel and realignment of field offices. These would require establishment of several CBFM field offices servicing a particular CBFM site or a cluster of CBFM projects. Every line division and relevant field office can then provide personnel to these offices. Target personnel for these offices are those personnel with marginal workloads by virtue of the progressive reduction of TLAs in all regions.
Reorientation and retraining of CBFM field personnel with respect to the renewed thrust of the government to implement CBFM. Such capacitation would require parallel assessment of CBFM projects’s needs and matching of personnel’s capacity. This would also entail adequate capacity to monitor and evaluate relevant forestry activities at all levels.

1. Institutional strengthening of POs in record keeping, MIS, and even in following their own policies.

2. More active LGU collaboration and participation, other stakeholders, through establishment, reactivation and/or strengthening of CBFM councils and multi-sectoral monitoring councils, among others.

3. Adoption of co-management system between the PO and the DENR wherever applicable. Since DENR people do most of the highly technical work like preparation of IEE/ECC documents, CRMF, AWP, and even feasibility studies for livelihood projects, a system of co-management can be worked out to further assist the POs. This strategy has been done in some JBIC-funded CBFM projects and was noted to improve CBFM operations a lot.

• Technical

- Establishment of a new system of AAC determination and RUP issuance. Foremost considerations are the capacity of the forest to absorb such disturbance and the POs capacity to utilize.

- Strengthening of current sites through reorientation, continuing capacitation works, and more frequent monitoring of current sites.

- Retrofitting of CBFM program with the WEM framework, explore and institutionalized productive areas of complementation.

- More liberal forest harvesting policy or system to allow PO the flexibility to determine the most economical and practical way of harvesting, transporting and processing timber that would benefit the communities at the same time safeguarding the long term sustainability of forests.

• Social, Financial and Livelihood

- Continuing community organizing works. Formulate bridge programs that will strengthen the POs, e.g., enterprise development, financial management, etc. Hence, each site must be assessed as to the needs of the POs for longer period of organization and continuous capacitation.

- Population program that would fit in the culture and social structures of the communities.

- Provision of enabling mechanism for a production agreement/arrangement with PO and the industry or the corporate sector. Such arrangement must highlight and explore the strengths of both sectors complementing to produce a sustainable stream of goods and services for the economic benefits of both and the country in general. Among the strengths of the corporate sector that can be infused in CBFM projects are their capacity to invest funds in plantations and highly efficient processing plants, modern forest products processing technology, and marketing services. The POs in turn can allocate areas for production sharing arrangement with the corporate sector as may be allowed in their CRMF, infusing their collective resources.
in producing high value forest crops at lower manpower costs. This strategy will require federation of POs for a more sustainable and stable supply of raw materials.

- Provision real marketing assistance to the POs. DENR must also invest in the training of its personnel along this line.

- **Research and Technology**

  - Participatory research in CBFM sites. In many research endeavors, information whether existing or still to be generated, are of paramount inputs to its success. Many POs already possess the information needed to fill in many research gaps in forest management. A mechanism by which the communities can be compensated for their efforts by the researchers must be provided.

  - Use of scientific forest management principle by the communities. This would involve creation of a information highway from the researchers to the communities.
4.3.2 Forest Plantation Development

Forest plantation development, especially in public forest lands where large scale plantation development is possible, is a potent program in improving income of upland communities and side-tracking them from doing destructive activities. More so, if upland people can be actively involved in the planning, implementation, harvesting and renewal of forest plantations. Like CBFM, forest plantation establishment is a cross-cutting component of many forestry programs. This time, it must be incumbent upon program planners to deliberately make known the intention of establishing plantations. Silviculturally, there is a world of difference between the establishment and management of forest plantations for protection purposes and for commercial production of timber and other forest products.

4.3.2.1 Policy and Regulatory Directions

Although forest plantations are becoming important, in view of logging ban in the dipterocarp forest and high demand for wood, the policy on plantation development has not stabilized. The IFMP policy has undergone several changes but no enough incentives to encourage private investors to put their money in industrial forest plantation. According to Angeles (2003), the “PWPA have long tolerated and have lived in a climate of control and punitive policies and regulations that not only have decimated the ranks of players in the forestry sector but have made them weak to contribute significantly to the socio-economic and environmental development of the country”. He further states, “It is time to have a new paradigm of mind frame. Only the government principally through the DENR can affect a new mind frame – dynamic, straightforward, progressive, daring and trustful. Only a new mind frame can re-create our forests, resuscitate our (dying) wood industry, empower our rural communities, and re-establish the integrity of our environment.” Among the policy directions proposed for the sector are as follows:

- Maintain mutual consultation between DENR and private sector on existing IFMA regulations in order to attain stability and viability of operations and investments;
- The DENR field offices (particularly the Regional and PENR Office) should be required to submit to central DENR Office, resource inventory reports and maps indicating the locations and sizes of potential areas for IFMAs in order the latter to be able to prepare a well-meaningful Master Plan for a national reforestation/ITP development by types of participants or stakeholders;
- Issued CBFMAs should be reviewed on the ground regularly. Those that are being used as shelter for illegal activities should be revoked. Those that are honest-to-goodness should be assisted either by subsidy, loan or other incentives.
- To increase the supply of raw materials from CBFMA plantations, the development and management of CBFM areas be strengthened. Similarly, guidelines on the implementation of joint venture and similar forest management agreements/contracts concerning the development, protection and utilization of forest lands and/or forest resources in CBFM project areas.

Among the other legislative measures required are as follows:

- The immediate certification by the Secretary, DENR through the President of the Republic of the Philippines the speedy passage by Congress of the bills on Sustainable Management of Forest Resources.
- A review of the bills on National Land Use Policy Act that should safeguard the integrity not only of NIPAS but all forestlands.
• A formulation of a bill for congressional action on incentives to ITP development in the model of Chile’s Decree Law 701 of 1974, for example. A comparison of PD 705 and Chile’s Decree Law 701 of 1974 is presented in Annex 2.

• Allowing TLAs that are expiring be converted into IFMAs in order to have a continuity of management, development and protection of the forest areas. Areas of cancelled-for-cause TLAs should be opened to corporate or community-based or there combination in order that these areas can be managed and protected from destruction by illegal logging, kaingin or fire. Studies have shown that cancelled or expired TLAs cannot be protected by the Government (UPLB, 1990) and where forest stewardship responsibility and accountability is absent, the forest become open-access and vulnerable to the forces of forest destruction, the so-called “tragedy of the commons” (HARDIN, 1977).

• Declaration of Industrial Forest Tree Species planted in private lands as “agricultural crops”.

• Delineation of limits between protection forests and production forests.

4.3.2.2 Primary programs and activities

The primary objective of forest plantation development is to have sufficient supply of wood and other forest products to augment those coming from the natural forest and export. By the year 2011, when all the existing TLA’s will expire/terminate, the supply of wood and other forest products will be coming from forest plantations and exports.

Thus, forest plantations should be established in suitable areas with the right kind of species. Forest plantation establishment shall be done following certain criteria, i.e. species-site matching, etc.) and abiding by the principles of good plantation management to help ensure plantation viability. Purely industrial production shall be the main concern of forest plantation and it will be achieved through government efforts and the participation of the local communities and the private sector through such programs as: 1) CBFM, 2) IFMA/SIFMA, 3) Tree Farms, 4) AFF and 5) PFD. Among the plans for this subsector are as follows:

• Provide mechanisms for effective forest stakeholders participation both in the planning process and execution of the plan. This would minimize social acceptability problems as well as issues arising from adverse land claims over potential plantation areas.

• Establishment of “forest plantation corridors.” Other areas of the public domain that are suitable for forest plantation development should be identified and declared as “Forest Plantation Corridors” particularly Region X (Bukidnon, Misamis Oriental); Region XI (Compostela Valley, Davao Oriental); Region IX (Zamboanga del Sur, Zamboanga del Norte); Region VII (Negros Oriental); Region VI (Negros Occidental); Region VIII (Samar Islands, Leyte); Region II (Isabela, Quirino, Cagayan and Nueva Vizcaya). In this connection, it is also recommended that before the start of any plantation activities the issue on land tenure and ownership situation have to be resolved. Any land tenure conflict has to be resolved prior to allocating the area to prospective investors. The areas identified for forest plantation development within public forests lands should be declared as “Permanent Forest Estate” to lessen land conflicts in the future. Lastly, areas allocated for forest plantation development particularly to big investors should be large enough to support export-oriented industries.

• DENR and private sector to promote programs ensuring success in forest plantation development that includes:
Sound silviculture practice starting from a) site-species matching, b) controlling weeds and forest protection, c) using fertilizers to correct nutrient deficiencies, c) thinning to aid growth of the final crop, etc.

Building the research base: never relax. Among the continuing activities that must be observed are as follows: a) pest and diseases surveillance and remedial action, b) evaluating silvicultural strategies relevant to the project, including, crucially, genetic tree improvement and c) monitoring what is happening to site and soil.

Selling what you have grown in markets

- **The real commitment: time**
  
  Among the concrete programs that can be seriously started, improved or expanded are as follows:

  - **Species – Site Matching**
    
    o Along with species end-use, seriously consider species-site compatibility as a basis for selecting the species to plant on sites to be reforested/planted;
    
    o Adopt an ecological zoning system for forestation planning using climatic region and altitude as the basic unit of each zone;
    
    o Establish and regularly operate facilities as a tool for gathering climatic data particularly rainfall data within the plantation area (especially when existing weather stations from PAGASA is more than 50 Km away
    
    o For maximizing the yield of the forest plantation, it is necessary to select carefully the seed source and seed origin or provenance of the seed. Trees as well as other plants are able to acclimatize in different growth conditions (latitude, altitude, climate, soil and other factors). This may happen, however, at the expense of the growth and quality of timber. Correct provenance identification is the basic factor for optimal plant growth. In order to find the best provenance, of known species, which can grow in the area in question, provenance trials serve as the basic source of information for the nursery in choosing the right provenance.

  - **Forest Tree Improvement, Production and Use of Quality Seeds**
    
    o Any country or Company that engages in forestation especially in industrial plantation development must engage in Forest Tree Improvement Program. The DENR-FMB is no exception. Forest managers of forest tree plantations can not be expected to be an expert in forest genetics or similar highly specialized fields, yet they are expected to appreciate the genetic consequences of management decisions, and must be able to recognize when and where the advice and assistance of forest tree breeders are required (Esteban, 1985).

  - **Choice of Species**
    
    The choice of species is usually governed by quality of site (soil, climate, slope and elevation), purpose of plantation development, type of intended product/s and market, alternative products and market, availability of seeds and planting materials, available technology and available information on previous successes made over the species. Although preference should be given to indigenous or local species, it is recommended that some exotic or introduced species be considered for their excellent growth rates, end-use and marketing reasons. Also, some of these exotic species particularly *Acacia mangium* and *Eucalyptus camaldulensis* from Australia can grow on very acidic and degraded sites for production of pulpwood, poles and low-quality wood. Also, it is suggested/recommended that where long-fibered species are required, fast-growing Pines like *Pinus caribaea* and *Pinus kesiya* (Benguet Pine) can be planted on specific site.
4.3.3 Sustainable Management of Residual Dipterocarp Forests

The sustainable management of residual dipterocarp forest is expected to bring forth investments and employment to rural people. Among the programs envisioned to promote this are as follows:

- Delineation of both old growth and residual forest together with the delineation of protection and production forests.
- Development and piloting of Joint Venture, Co-production and Production Sharing modes of forest management in residual forests.
- Development of new forest utilization technologies that are appropriate for residual forests as well the heightened concern in environmental protection.
4.4 Programs on Forest-Based Industries Development

The following recommendations are derived from the various issues identified in the assessment of the programs and projects in pursuance of the strategies in the 1990 MPFD.

- Provision of Long Term Tenure of Industrial Permits
  - Spell out clearly the requirements and conditions for automatic conversion from TLA to IFMA, and avoid frequent amendments that often result in confusing the investors;
  - Modify policies that favor early approval of multi-year integrated operations plans of licensees; and
  - Implement soonest the enunciated policy by Sec. Gozun on the issuance of one permit for the establishment and operation of processing plants. Consider also the approval of such permits by the Regional Executive Directors.

- Financial Assistance in Investments and Retooling
  - Assist the industry access affordable capital for retooling;
  - Provide incentives, such as tax free importation of machineries, to firm that undertake retooling; and
  - Speed up the rationalization of the wood-processing sector of the forest-based industry.

- Improvement of Infrastructures
  - Make representations for lower freight rates for the forest-based industry from the shipping industry.

- Provision of Incentives
  - Discuss with BOI the re-enlisting of the forest based industries particularly plywood as beneficiary in the incentives provided by the Omnibus Incentives Act;
  - Allow the export of lumber from imported logs to recoup foreign exchange used in importing the logs, expand employment and help stabilize the industry;
  - Grant a 5-year real estate tax holiday for the development of plantations (trees, rattan or bamboo) in private lands as suggested by Sec. Guzon during the 52nd anniversary of the PWPA, August 22, 2003; and
  - Slow down the reduction of tariff of imported logs and wood products to give the industry time to become more efficient and competitive.

- Provide New Technologies
  - Lower the diameter limit for harvesting LUS to 40-50 cm;
  - Adopt more effective strategies for the transfer of technologies on the utilization of LUS to the private sector such as tax incentives in the use of LUS; and
  - Encourage research on breeding of LUS to improve growth rates by providing research funds to this purpose.

- Establish Community-based Industries
o Re-structure the CBFM Units at the CENROs as extension units with sufficient personnel of
disciplines and expertise needed in assisting POs in developing their communities particularly
in livelihood and enterprise development;

o Provide adequate financial support to the CBFM Units;

o Livelihood and enterprise develop should be the cutting edge strategy in establishing and
organizing POs in CBFM projects;

o Link POs with OGAs, LGUs, NGOs for easier access of resources needed by the communities
in establishing livelihood and enterprise projects; and

o Consider the practice of universal suspension of RUPs in favor of investigating
reported/suspected anomalies in CBFM projects and imposing penalties to those found
violating their CBFMA.

• Develop Product Standards

o Continue to assist the BPS in the development of product standards for the forest-based
industries; and

o Deputize PWPA and other industry organizations in the monitoring of compliance of standards
by industry members.

• Establishment of a Forest Industries Board

o Establish a Forest Industries Board that is independent of DENR and DTI and with enough
authority to address the needs for promoting the forest-based industries.

• Sustainable Management of Existing Resources

o Examine the viability and effectiveness of the special rattan deposits in the development of
rattan plantations;

o Consider requiring rattan permitees proof of established plantations instead of the rattan
deposit as requisite for renewal or permit to operate;

o Develop guidelines on the management and utilization of bamboo resources; and

o Establish a program on rattan and bamboo plantation development.

• Utilization of Non-commercial and Lesser-used Non-timber Species

o Provide sufficient funding for research on properties, uses and processing of lesser-used non-
timber species; and

o Include in forest inventories non-timber forest plants with emphasis on lesser-used but
potentially important non-timber species.

• Improved Access to Resources by Local Communities

o Assist POs access resources that will allow them to establish enterprises based on their newly
given privilege of accessing forest-based resources;

• Meeting the future requirements for wood, rattan and bamboo

o Establish the needed plantations for wood, rattan and bamboo to meet requirements of the
furniture industries and for housing.
• Forestry Programs Based on the Master Plan for Forestry Development
  o Future development programs in forestry must be based and in pursuit of the goals and objectives of the revised Master Plan for Forestry Development.
  o Review the Master Plan make revision periodically, preferably every 5 years.

• Anchor Forestry Development on Stable Policies
  o Forest policies should promote development rather than based on control philosophy. Revise forest policies toward this end; and
  o Work for the passage of the “Sustainable Forest Management Act”.

4.5 Support Programs (Cross-Cutting Programs)

Many programs already identified elsewhere are crosscutting, i.e., programs on policy and institutions, and programs on watersheds. However, there are some priority cross cutting programs that may well be implemented as umbrella programs catering to several subsectors to eliminate some forest management constraints or in equipping the decision makers and forest managers the right information about the resources and its environment. Among these cross-cutting programs are as follows:

• Forest boundary delineation (permanent forest estates)

Explicitly provided under Section 4, Article XII of the 1987 Philippine Constitution that the Congress, as soon as possible, determine by law the specific limits of forest lands and national parks, marking clearly their boundaries on the ground. This was provided as a safeguard against the possible disposition or appropriation of any portion of forest lands and national parks contrary to the Constitution (De Leon, 1999). But before the specific limits are legislated and boundaries are actually marked on the ground, there is a need to delineate first their actual boundaries on the ground based on surveys and classifications conducted under land classification activities pursuant to PD 705 and preceding laws. However, a clear framework and guidelines to pursue this important activity within the framework of WEM must be formulated to guide the surveyors.

• Delineation of production and protection forests

Within the permanent forest estates are areas that can be solely devoted to protection while other areas can be devoted to production. Production forests can further be divided into different productive land uses compatible with specific crops beneficial to society. Following the provisions of RA 7586, areas covered by IPAS can further be subdivided into zones covering a wide range of protective and productive uses. Delineation of production and protection forests can commence simultaneously with watershed landuse planning for efficiency in the use of resources

• Forest resource assessment/Forest resources inventory

Integral to a good planning and programming system in forest management is the availability of reliable information to start with. Depending on the purpose of management, the use of different sampling intensities in forest resources assessment must be resorted to save on costs. Permanent sampling plots shall be established to continuously monitor the conditions of forests and forests resources through time.
- Forest resources accounting

Institutionalization of an accounting system both in the physical and economic aspects to assess the value of the contribution of forests in the national economy. Such value comprise both use-values and non-use values. Use values include direct contributions from goods and services and indirect contributions of soil formation, carbon sink capacity, recreation, watershed conservation and water yield augmentation. Non-use values originate from the intangible satisfaction of having saved the asset and the stock of information and knowledge it represents, and of being able to keep options for future use. These different types of values do overlap and the extent of use and non-use values vary for different types of forests, and situations of supply and demand.

Accounting for changes in both the physical and asset value provides vital information for decision makers to assess impacts of management decisions. This would guide the decision makers to select options that would enhance the net value of forest assets. This would also guide them in addressing source of forest depreciation. Capital gains are a source of income, and capital losses are reduction in income. Failure to extend this depreciation concept to the capital stock embodied in natural resources is a major omission and inconsistency. From an economic accounting perspective, the depletion of the natural resources through use (exploitation) or misuse (degradation) represent a real economic cost and diminution in national wealth, which is equivalent to the wearing out (depreciation) of physical structures and equipment. Full accounting of the values the forest provides will also help the sector convince people that investing in forestry can provide far greater benefits that would

- C & I, and Forest Certification

Full development of C & I system for different types of forests and management systems is one big step towards internalizing sustainable forestry in the mainstream of forest management in the Philippines. With the advent of globalization and increasing demand for efficiency, adoption of C & I system can help prepare watershed/forest managers incorporate sound management principles in their long term plans as well as day-to-day activities
5.0 STRATEGIC PROGRAMS IMPACT ASSESSMENT

5.1 Business as Usual

The stakeholders in the sector are now becoming aware and vigilant about the fate of forestry in the country. There were already many assessment conducted and recommendations forwarded. The Review and Revision of the Master Plan for Forestry Development Project only validated what has been forwarded and extensively discussed in various fora and professional gatherings. Nevertheless, the Project provides the strategic focus by which the sector could concentrate to make some successes. Without the Revised Master Plan, the sector would be continuously confronted by issues and problems already known to exist a long time ago.

Firstly, forestry institutions would continue to be ineffective in addressing the sector's problems. It would continue to operate under weak policies and ill-equipped human resources. Nevertheless, it will continue to move into the path of sustainable forestry with the implementation of initiatives pragmatically designed to address current problems. However, it will still be saddled by the same issues and problems identified in this Project. Some of these are:

- forestlands will continue to be encroached, forest boundaries unrespected;
- continuous decimation of residual dipterocarp forest, watersheds will continue to be degraded and forests converted to other land uses;
- private investments in forestry will remain very low; and
- intersectoral linkages and cooperation would be hard to achieve

Secondly, poverty in the uplands would continue to become a problem in forest conservation. Population would exert more pressure on forest resources because of lack of employment opportunities. The sector may be caught flatfooted by the irreversible impacts of exploding population,

Thirdly, many watersheds will continue to lose their vital functions. Alarmed stakeholders will continue to find ways in solving the problems. Some groups will be commissioned to continue to evaluate and assess the situation. Sooner or later, they will find the same issues and problems, and will recommend the same solutions.

With the sector's continuing decline, it would realize the need for some plans and programs and would scramble to have one. Hence, it would resort to the previous assessments conducted and try to reconfigure earlier plans. Eventually, it would have the guts to implement the plans although at a much later period. By this time, the sector is almost hitting rock bottom, where it is more difficult to make a turn around.

5.2 With the Revised Master Plan

The priority programs of the Revised Master Plan are so designed to have a snowballing effect. Hence, it addresses the more critical problem first so that other programs may soon be facilitated. Among the expected impacts of priority programs are as follows:


5.2.1 Policy Reforms and Institutions Development

Harmonization of forest and other policies affecting the sector would eliminate flashpoints that spur conflicts among government agencies dealing with the same clientele. This also afford platforms for long term coordination among agencies and stakeholders. Retrofitting the PFA as a line agency, and reorienting its main function as first: a forest land management agency and second, a forest resources management authority, would respond appropriately to the long term goal of putting every hectare of forest lands under sustainable management unit. The separation of the authority and enterprise functions of the PFA would promote efficiency in forestry operations. The capacitation of forestry institutions would be facilitated where conflict in functions

On the other hand, the creation of the National Council for Sustainable Forestry (NCSF), a coordinative body, would facilitate coordination among agencies whose concerns are influenced or affected by what is happening in watersheds; e.g., Department of Agriculture with their AFMA, Department of Agrarian reform with the CARP, etc.

5.2.2 Prioritization/watershed integrated land use planning simultaneous with forest boundary delineation

Prioritization of watershed for integrated landuse planning purposes simultaneous with forest boundary delineation would start the process on determining what are the forest areas needed for protection purposes and what are the areas needed for other purposes. Such activities are really the critical start of sustainable forest management where the use for forest lands are determined based on criteria that would best serve the society in an optimum manner. This would allow the watershed/forest managers and other watershed/forest users realize the many and interrelated functions of watershed.

This set of programs would also provide sustainable production of water for domestic, irrigation, power generation and other industrial uses at the same time affording the stakeholders determine and operationalize other beneficial options in the use of watersheds. The ultimate impact would be the ensurance of long term health of the watersheds.

5.2.3 MIS, IEC and R & D enhancement

Full support in the enhancement and development of these support programs would create an information highway where the communities and other watershed/forest managers would have easy access to information for improvement of their management decisions. A good MIS would make a DENR Regional Office more investment- friendly by minimizing the cost of obtaining information for investment purposes. Availability of up-to-date technology would promote economic efficiency in forest management. This program would also afford forest managers anchor their decisions on management tools and information based on science.

5.2.4 Sustainable management of residual forests, other natural forests, arresting forest destruction

This program would contribute much to poverty alleviation in the uplands by creation of employment opportunities in the uplands. This strategy would minimize conversion of natural forests into other non-forest landuses. This would help restore order in the management of residual forests where currently, 36,000 ha are lost annually due to conversion. Likewise, this would help attain self sufficiency in wood and other forest products.
5.2.5 Forest area expansion through plantation development, ANR, other means

Establishment of forest plantations is one of the visible means of employing people. However, employment in this type of endeavor is usually intermittent. By having forest plantations at the right places and being intensively managed for commercial production would provide continuous source of employment. The process of establishing, tending, harvesting, processing, marketing and renewal of plantations would be a continuous and deliberate cycle addressing poverty, wood sufficiency, illegal practices in affected areas.

On the other hand, expansion of other forest areas for rehabilitation and restoration purposes through establishment of indigenous forest plantations would improve the health of the watersheds. This would also impact on the conservation of biodiversity.

5.2.6 Biodiversity and environmental programs

With the current initiatives on the protected area subsector and the proposed programs under the revised Master Plan, it is envisioned to have a perpetual existence of biological and physical diversities in a system of protected areas and such other important biological components of the environment sustainably managed for the benefit of mankind. The program impacts would be a secure and healthy PA system managed by well-informed and empowered stakeholders supported by the citizenry and providing sustainable benefits and enjoyment to society.

5.2.7 Forest industries rationalization and development

Rationalization and development of forest industries would afford the nation to see the economic contribution of forests. This would transform the forest-based industries into globally competitive firms with environmentally-sound forest management platforms significantly contributing to the national economy and helping address poverty alleviation in their areas of operations and vicinities.

5.2.8 Sustainable management of grazing lands

Implementation of programs on grazing would improve benefits from such areas which are minimal at present. This program is designed to make grazing lands as sustainable source of health and wealth for the benefit of Filipinos. This will also enhance the improvement of the carrying capacity and productivity of grazing lands through improved forage and pasture grasses, improve livestock production through proper management practices and breeding technology and provide security of tenure and incentives to grazing land managers to improve their management operations over the long term.

5.2.9 Full development of M & E and C & I system for all forest types and management systems

Full development of M & E and communications systems as well as C & I as a management tools would improve utility of information and enhance horizontal and vertical flow of communications. This would also impact on the improvement of MIS and IEC. As a complementary tool, C & I would help prepare forest managers and users realize the impacts of management decisions on the health of the forests. C & I system would help transform local forest management systems produce globally competitive products from sustainably managed forests. This also preparatory to forest certification, a necessary tool in the full implementation of SFM.

5.2.10 CBFM as a cross cutting strategy in all forest management systems

Enhancement of CBFM implementation would put into the right track many CBFM projects where POs became inactive due to various reasons or another. This is the bridge program where the lack of
continued support rendered many POs disillusioned with the program. This is expected to activate many
POs and contribute to the poverty alleviation in the uplands. On the other hand, CBFM expansion through
strengthening and expansion of existing sites, and identification and implementation of new sites close
many open access areas and likewise put them under formal management systems that would ensure
sustainability of resources
6.0 REVISED MASTER PLAN IMPLEMENTATION

6.1 Strategic Institutional Actions

Upon formal acceptance of the Revised Master Plan by the DENR Secretary, it would be strategic that the same Plan be formally approved by the Philippine Cabinet. This would render legitimacy to the Plan as well as encourage the sector who prepared this Plan. Furthermore, legal adoption of this Plan through legislative actions would shield it from political changes in the country and make it stable.

The top 10 priority programs had been identified based on their criticality in putting order in the sector. Their immediate implementation is envisioned to catalyse positive chain reaction to important set of conditions for sustainable forestry to take place. A detailed action plan for these top 10 priority programs must ensue immediately upon formal acceptance of the Revised Master Plan. Timing is critical as important programs need to be included in the 2005 budget cycle. Among the critical activities to be included in the action programs are listed in Section 6.3. In the meantime, the PFA must conduct IEC for the plan. Presentation of the plan to donor agencies would boost adoption of programs that need funding assistance.

This Plan shall be implemented by the sector. The DENR is the focal agency in helping orchestrate most of the activities in carrying out the programs. Acceptance of the plan by other sectors of society, and by different forestry subsectors and stakeholders who, by one reason or another, were not able to participate in its formulation, is also a paramount concern for its successful implementation.

The implementation of the Revised Master Plan would involve not only DENR regional offices but also require involved collaboration of different stakeholders. Thus, opportunities for productive collaboration must be explored. A key activity to follow this formulation of the forestry sector plan at the national level is the realignment of regional plans to the priority programs set at the national level. Current regional initiatives already aligned with the Plan shall be continued and enhanced. Some Regions have unique characteristics and conditions which may reinforce or impinge on the implementation of top 10 priority programs identified in the national level, hence, formulation of regional plans shall dwell on regional settings, their strength and potentials, to realize the goals of the sector in their regions.

It would be important to note that there are many other programs identified in Section 4 of this report concerning different forestry subsectors that were not included in the national priority programs. These programs are not prioritised because they are not critical in the short term. However, they are part of the long term plan to sustain the sector. It will be useful to make careful considerations of these as some subsectors or regions may find such other programs relevant to their conditions. However, still basic to successful implementation of any plan is to capacitate the institutions mandated to implement the plans.

6.2 Financing Programs

It is necessary to dramatically increase investment in forestry and forest-based industry sectors to meet the needs of the future. In that, the non-government sectors will have an important part to play. Currently, most of the investment funds for government programmes are obtained from government revenue sources and as loans and grants from external development agencies. Mobilisation of investment funds locally is very important in meeting at least part of the future investment needs. And, in order to attract private sector participation, it is necessary to make investment profiles of suitable projects available, with relevant information and analysis.
Financing of forestry program is dependent essentially on public sources (including external assistance) whereas forest products development is mostly supported by private finance. Both public and private financing are needed in the implementation of the revised Master Plan. To support regular flow of funds, and financial autonomy, several countries have developed innovative mechanisms such as forest funds, private ledger account and special revolving funds. One positive step towards this is the establishment of the CBFM Special Account. This would partly take care of the huge investments needed by the sector as certainly, CBFM is one of the biggest programs of the government in terms of land area coverage and number of beneficiaries.

Private sector participation is an important ingredient in financing some critical programs particularly in the area creating forest capital and enhancing the value of existing forest capital. However, the government must be facilitative in providing mobility of investment capital. Mobility implies moving from one mode of business approaches, e.g., labour-intensive to more capital-intensive ventures, requiring ever larger investments or vice versa. Mobility is, however, constrained by several factors: lack of entrepreneurship, technology, institutional support and development infrastructure. There are several cases, in developing countries, where small local undertakings evolved into large enterprises. The Village Forest Associations of Korea expanded their investment capital, through their federations at regional and national levels. In at least nine developing countries, domestic corporations developed into TNCs in forest-based sectors. This provides one of the positive notes to the issue of mobilisation of private investment in forestry.

In supporting local private sector or corporate sector investment, commercial and other banks can play a crucial role. Support for the large number of small investors whose sources of funds are their limited personal savings and loans from friends and relatives, rarely comes from any formal credit facilities. In some countries, micro-credit facilities like the Grameen Bank of Bangladesh have been developed. The credit administration should have the capacity to see that the investment does not end up as failures.

A clear awareness of the value of forest benefits and establishing a system for forest resources accounting will to some extent, help to attract investment into the forestry sector. Institutionalization of forest resources accounting would enable PFA and its regional instrumentalities to be in control of the information system. Providing the right information to potential investors would facilitate investment decisions. Thus, to attract more private investments into the sector, the DENR and its Regional Offices must start to upgrade their information system.

6.3 Schedule of Implementation

Figure 6.8 shows the implementation schedule for the priority programs under the Revised Master Plan.
Figure 6.8. Priority programs implementation schedule.

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<th>PROGRAMS</th>
<th>Period of Implementation (in years)</th>
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<tr>
<td>1. Policy Reforms and Institutions Development</td>
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<tr>
<td>- Harmonization of forest and other policies</td>
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<tr>
<td>- In-depth review of policies, consultations</td>
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<td>- Harmonization, policy reforms, codification</td>
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<td>- Dissemination, continuing review, updates</td>
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<td>- Reversion/retrofitting the PFA as a line agency</td>
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<td>- Capacitation of forestry institutions</td>
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<td>- National Council for Sustainable Forestry (NCSF)</td>
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<td>2. Prioritization/watershed integrated land use planning</td>
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<td>- Prioritization</td>
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<td>- Watershed Landuse Planning</td>
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<td>- Forest Boundary Delineation/Mapping</td>
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<td>3. MIS, IEC and R &amp; D enhancement</td>
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<td>MIS</td>
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<td>- Upgrading of Central PFA MIS</td>
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<td>- website installation, updating</td>
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<tr>
<td>- Upgrading of regional MIS facilities</td>
<td></td>
</tr>
<tr>
<td>- Regional Information gathering systems development</td>
<td></td>
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<tr>
<td>IEC</td>
<td></td>
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<tr>
<td>- Forestry and Environmental Education</td>
<td></td>
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<tr>
<td>- Forestry Training</td>
<td></td>
</tr>
<tr>
<td>R &amp; D</td>
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</tr>
<tr>
<td>4. Sustainable management of residual/other forests</td>
<td></td>
</tr>
<tr>
<td>Delineation/demarcation of prof’n &amp; prod’n forests</td>
<td></td>
</tr>
<tr>
<td>Development of JV, CP &amp; PS models/mechanisms</td>
<td></td>
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<tr>
<td>Implementation of JV, CP &amp; PS</td>
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<tr>
<td>5. Forest area expansion</td>
<td></td>
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<tr>
<td>- Commercial Plantation</td>
<td></td>
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<td>- Forest Rehabilitation</td>
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</table>

- Full time activity
- Part time activity
### Figure 6.8. Continued...

<table>
<thead>
<tr>
<th>PROGRAMS</th>
<th>Period of Implementation (in years)</th>
</tr>
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<tr>
<td></td>
<td>1</td>
</tr>
<tr>
<td>6. Biodiversity and environmental programs</td>
<td></td>
</tr>
<tr>
<td>7. Forest industries development</td>
<td></td>
</tr>
<tr>
<td>- Rationalization</td>
<td></td>
</tr>
<tr>
<td>- Provision of new technologies in forest utilization</td>
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<tr>
<td>- Improvement of infrastructures</td>
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<tr>
<td>- Establishment of community-based industries</td>
<td></td>
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<tr>
<td>- Establishment of a Forest Industries Board</td>
<td></td>
</tr>
<tr>
<td>8. Sustainable management of grazing lands</td>
<td></td>
</tr>
<tr>
<td>Identification, demarcation, planning</td>
<td></td>
</tr>
<tr>
<td>Sustainable Management</td>
<td></td>
</tr>
<tr>
<td>9. Full development and implementation of M &amp; E, C &amp; I development</td>
<td></td>
</tr>
<tr>
<td>- Identification, demarcation, planning</td>
<td></td>
</tr>
<tr>
<td>- Sustainable Management</td>
<td></td>
</tr>
<tr>
<td>10. CBFM - cross-cutting strategy</td>
<td></td>
</tr>
<tr>
<td>- Enhancement of CBFM implementation in existing sites</td>
<td></td>
</tr>
<tr>
<td>- Identification and appraisal of new sites</td>
<td></td>
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<tr>
<td>- Establishment and CO of new sites</td>
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<tr>
<td>- Site Development</td>
<td></td>
</tr>
<tr>
<td>- Livelihood/Enterprise development</td>
<td></td>
</tr>
</tbody>
</table>

- Full time activity
- Part time activity
6.4 Budgetary Requirements

The priority programs of the Revised Master Plan has a total indicative budgetary requirement of 60,614 mil P over it 25-year period of implementation (Table 6.58). Among the programs with the biggest requirements are forest plantations and CBFM with totals of 34,000 and 17,075 mil P, respectively. The critical period which is the first 5 years has a total budgetary requirements of 21,115.3 mil P. The total requirement constitutes 62 % of public investment (37,584 mil P) and 38 % of private sector investment (22,031 mil P). Among the programs where private sector is expected to be heavily involved are the establishment of commercial forest plantations and CBFM where they are expected to collaborate with the POs for joint venture activities. Table 6.58 shows the details of the indicative budgetary requirements for the priority programs.

Table 6.57. Summary costs of priority programs under revised master plan (mil P).

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<thead>
<tr>
<th>PROGRAMS</th>
<th>Implementation Period (in years)</th>
<th>TOTAL</th>
<th>Public Sector</th>
<th>Private Sector</th>
</tr>
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<tr>
<td>1. Policy Reforms and Institutions Development</td>
<td></td>
<td>100.0</td>
<td>100.0</td>
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<tr>
<td>2. Prioritization/watershed integrated land use planning</td>
<td>3,853.0 1,271.0 - -</td>
<td>5,124.0</td>
<td>5,124.0</td>
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<tr>
<td>3. MIS, IEC and R &amp; D enhancement</td>
<td>653.5 647.5 657.5 1,315.0</td>
<td>3,273.5 2,796.0</td>
<td>477.5</td>
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<td>4. Sustainable management of residual/other forests</td>
<td>10.0 5.0 - -</td>
<td>15.0</td>
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<tr>
<td>5. Forest area expansion</td>
<td>6,800.0 6,800.0 6,800.0 13,600.0</td>
<td>34,000.0</td>
<td>16,600.0 17,400.0</td>
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<tr>
<td>6. Biodiversity and environmental programs</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>7. Forest industries development</td>
<td>205.0</td>
<td></td>
<td>205.0 51.2 153.8</td>
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<td>8. Sustainable management of grazing lands</td>
<td>60.0 60.0 60.0 120.0</td>
<td>300.0</td>
<td>300.0</td>
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<tr>
<td>9. Full development and implementation of M &amp; E, C &amp; I</td>
<td>110.5 125.5 95.5 191.0</td>
<td>522.5</td>
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<td>10. CBFM - cross cutting strategy</td>
<td>9,363.3 7,704.2 7.5 -</td>
<td>17,074.9</td>
<td>12,074.9 5,000.0</td>
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<tr>
<td>TOTAL</td>
<td>21,115.3 16,623.2 7,630.5 15,246.0</td>
<td>60,614.9 37,583.6 23,031.3</td>
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</table>

% 62.00 38.00
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<th>Period of Implementation (in years)</th>
<th>Total</th>
<th>Public Sector</th>
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<td>1. Policy Reforms and Institutions Development</td>
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<tr>
<td>- Harmonization of forest and other policies</td>
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<td></td>
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<tr>
<td>Indepth review of policies, consultations</td>
<td>150</td>
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<tr>
<td>Harmonization policy reform, codification</td>
<td>30</td>
<td>30</td>
<td>30</td>
</tr>
<tr>
<td>Dissemination, continuing review updates</td>
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<tr>
<td>- Revision of the PA Act, becoming agency</td>
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<td>- Capitation of key institutions</td>
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<tr>
<td>- National Council for Sustainable Forestry (NCSF)</td>
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<tr>
<td>2. Prioritization/ Watershed Integrated Land Use Planning</td>
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<td>- Prioritization</td>
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<td>- Watershed Land Use Planning</td>
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<td>- Forest Boundary Delineation Mapping</td>
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<td>3. MIS, IEC and R &amp; D enhancement</td>
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<td>- Upgrading of Central MIS</td>
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<td>- Website installation, updating</td>
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<td>- Upgrading of regional MIS facilities</td>
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<td>- IEC Training</td>
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<td>- Forest and Environmental Education</td>
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<td>- IEC Training</td>
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<td>- R&amp;D</td>
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<td>4. Sustainable Management of Natural Forests</td>
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<td>- Compliance with Water Resources</td>
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<td>- Development of NPS (RPS) models/mechanisms</td>
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<td>- Implementation of NPS (RPS)</td>
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<td>5. Forest Expansion</td>
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<tr>
<td>- Commercial Plantation</td>
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<td>1,160</td>
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<td>- Forest Rehabilitation</td>
<td>200</td>
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<td>PROGRAMS</td>
<td>Period of Implementation (in years)</td>
<td>TOTAL</td>
<td>Public Sector</td>
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<td></td>
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<td>2</td>
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<tr>
<td>6. Biodiversity and environmental programs</td>
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<tr>
<td>7. Forest industries development</td>
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<tr>
<td>- Rationalization</td>
<td>5.0</td>
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<tr>
<td>- Provision of new technologies in forest utilization</td>
<td>Carried out under research</td>
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<tr>
<td>- Improvement of infrastructures</td>
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<td></td>
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<tr>
<td>- Establishment of community-based Industries</td>
<td>Carried under CBFM programs</td>
<td></td>
<td></td>
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<tr>
<td>- Establishment of a Forest Industries Board</td>
<td>Carried under rationalization</td>
<td></td>
<td></td>
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<tr>
<td>8. Sustainable management of grazing lands</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>- Identification, demarcation, planning</td>
<td>Carried under Watershed Programs</td>
<td></td>
<td></td>
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<tr>
<td>Sustainable Management</td>
<td>12.0</td>
<td>12.0</td>
<td>12.0</td>
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<tr>
<td>9. Full development and implementation of M&amp;E, C&amp;I</td>
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<td></td>
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</tr>
<tr>
<td>- M&amp;E, satellite photos</td>
<td></td>
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</tr>
<tr>
<td>- M&amp;E systems upgrading/development</td>
<td>18.0</td>
<td>18.0</td>
<td>18.0</td>
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<tr>
<td>- C&amp;I development for all types of forests/mgt systems</td>
<td>3.0</td>
<td>3.0</td>
<td>3.0</td>
</tr>
<tr>
<td>10. CBFM cross-cutting strategy</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Enhancement of CBFM implementation in existing sites</td>
<td>33.3</td>
<td>33.3</td>
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<td>- Identification and appraisal of new sites</td>
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<tr>
<td>- Establishment of CBFM in new sites</td>
<td>733.3</td>
<td>733.3</td>
<td>733.3</td>
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<tr>
<td>- Site Development (Agriculture, other forest types)</td>
<td>1,500.0</td>
<td>1,500.0</td>
<td>1,500.0</td>
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<tr>
<td>- Livelihood/Empire development</td>
<td>7.5</td>
<td>7.5</td>
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<td>TOTAL</td>
<td>2,483.4</td>
<td>4,704.2</td>
<td>4,660.2</td>
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Table 6.58. Continued...
Table 6.59. Basic assumptions for the total indicative cost of priority programs.

<table>
<thead>
<tr>
<th>PROGRAMS</th>
<th>Basic Assumptions</th>
</tr>
</thead>
</table>
| **1. Policy Reforms and Institutions Development** | - Harmonization of forest and other policies  
  - In-depth review of policies, consultations  
  - Harmonization, policy reforms, codification  
  - Dissemination, continuing review, updates  
  - Reversion/retrofitting the PFA as a line agency  
  - Capacitation of forestry institutions  
  - National Council for Sustainable Forestry (NCSF) | 15 mil P/yr for 1st 3 years, 3 mil P/yr from 3-5 years, 2 mil P/yr beginning 3rd year and continuing, carried under harmonization/policy reform |
| **2. Prioritization/watershed integrated land use planning** | - Prioritization  
  - Watershed Landuse Planning  
  - Forest Boundary Delineation/Mapping | 20 mil P/yr for 1st 2 years, based on P167/ha, 12.4 mil ha 75:25 for the first 2 5-year period, resp. P243/ha for 12.4 mil ha, 75:25 for the first 2 5-year period, respectively |
| **3. MIS, IEC and R & D enhancement** | - Upgrading of Central PFA MIS  
  - Upgrading of regional MIS facilities  
  - Regional Information gathering systems development  
  - IEC, Training  
  - Forestry and Environmental Education  
  - Forestry Training  
  - IEC  
  - R & D | 3 mil P 1st yr, 1 mil p/yr for succeeding years, .5 mil P/yr, 2 mil P per region for 1st year, .5 mil P/yr for maintenance, 1 mil P/yr/region, 70, 80, & 90 mil P/5 yrs for the next 15 years, 120 mil P/5 yrs for next 15 years, 60,70, & 80 mil P/5 yrs for the next 15 years, 50 mil P/yr on top of what is current, in support of sustainable forestry |
| **4. Sustainable management of residual/other forests** | - Delineation/demarcation of prot’n & prod’n forests  
  - Development of JV, CP & PS models/mechanisms  
  - Implementation of JV, CP & PS | Carried under Watershed Programs, 10 mil P first 5 years, 5 mil P next 5 years, Budget depends on area and development component for each site. |

221
<table>
<thead>
<tr>
<th>PROGRAMS</th>
<th>Basic Assumptions</th>
</tr>
</thead>
<tbody>
<tr>
<td>5. Forest area expansion</td>
<td>P29,000 per ha for 40,000 ha/year</td>
</tr>
<tr>
<td>- Commercial Plantation</td>
<td>Ave. of P20,000/ha for 10,000 ha per year</td>
</tr>
<tr>
<td>- Forest Rehabilitation</td>
<td></td>
</tr>
<tr>
<td>6. Protected area and biodiversity conservation program</td>
<td>to be determined during the action planning</td>
</tr>
<tr>
<td>7. Forest industries development</td>
<td></td>
</tr>
<tr>
<td>- Rationalization</td>
<td>5 mil P for policy study; 200 mil P assistance to industry for 5 years</td>
</tr>
<tr>
<td>- Provision of new technologies in forest utilization</td>
<td>Carried out under research</td>
</tr>
<tr>
<td>- Improvement of infrastructures</td>
<td>Carried under rationalization</td>
</tr>
<tr>
<td>- Establishment of community-based Industries</td>
<td>Carried under CBFMprograms</td>
</tr>
<tr>
<td>- Establishment of a Forest Industries Board</td>
<td>Carried under rationalization</td>
</tr>
<tr>
<td>8. Sustainable management of grazing lands</td>
<td></td>
</tr>
<tr>
<td>Identification, demarcation, planning</td>
<td>Carried under Watershed Programs</td>
</tr>
<tr>
<td>Sustainable Management</td>
<td>P40/ha/yr * 300,000</td>
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<tr>
<td>9. Full development and implementation of M &amp; E, C</td>
<td></td>
</tr>
<tr>
<td>- M &amp; E, satellite photos</td>
<td>5.5 mil P every 5 years, photos and interpretation</td>
</tr>
<tr>
<td>- M &amp; E systems upgrading/development</td>
<td>2 mil Pyr central PFA, 1 mil Pyr for each region</td>
</tr>
<tr>
<td>- C &amp; I development for all types of forests/mgt</td>
<td>3 mil Pyr for the next 10 yrs</td>
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<tr>
<td>10. CBFM - cross cutting strategy</td>
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<tr>
<td>- Enhancement of CBFM implementation in existing</td>
<td>P100,000 enhancement budget/site for priority 1,000 sites, 1st 3 years</td>
</tr>
<tr>
<td>- Identification and appraisal of new sites</td>
<td>0.2 mil P/site for additional 1,500 sites, for next 5 years</td>
</tr>
<tr>
<td>- Establishment and CO of new sites</td>
<td>P2,000 CO cost/ha for 3.3 M ha of new sites</td>
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<tr>
<td>- Site Development (Agroforestry, other forest pltns)</td>
<td>Ave. of P20,000/ha CSD cost for around .5 mil ha, 60:40 ratio for 10 yrs</td>
</tr>
<tr>
<td>- Livelihood /Enterprise development</td>
<td>P150,000 per site for 500 priority sites, 50 sites/year</td>
</tr>
</tbody>
</table>
6.5 Monitoring and Evaluation, and Communications

The monitoring and evaluation of the Revised Master Plan activities shall be conducted continuously. A designated office in the PFA (currently FMB) shall coordinate with the concerned sectors (e.g., LGUs, other GAs, private institutions, private sector groups, Regional Offices and other stakeholders) regarding the activities being conducted and progress made by all sectors, including problems encountered by particular sectors, subsectors and stakeholders in the implementation of the Plan. This office shall also assist field implementers in the dissemination of information available at the national level to the field implementers. Counterpart offices or units in the central, regional and other field levels and in other relevant government agencies shall also be established. Funding for the activities of these offices shall be integrated in their regular budget proposals. However, a seed funding for its operation is necessary to set up the whole system in to the bureaucracy.

6.6 Review and Revision

The review and revision of any plan is necessary basically because the relevant conditions and premises by which the plans were anchored may change through time. Likewise, future developments may render parts of the plans outdated or un-implementable. Hence, the Revised Master Plan shall be reviewed regularly. The first formal review shall be conducted in 2010 and to be repeated every 5 years thereafter. The review and revision process shall also be participatory as possible and may concentrate on the whole plan or only on components needing review and amendments. Other relevant processes (e.g., extensive use of information technology) not possible to do during these times may also be resorted to for efficiency.
ANNEX 1

RESULTS OF REGIONAL WORKSHOPS
Workshop Results (Workshop 1, University Hotel, Quezon City, July 7-8, 2003)

Group 1. LGU and DENR Partnership on Watershed Management

**Vision:**  Watershed as a sustainable co-managed ecosystem supporting the needs of the empowered stakeholders living in harmony with nature.

**Objectives:**
1. To promote sustainable utilization of watershed resources
2. To promote social and production systems that enhances the watershed's functions
3. To promote multi-sectoral processes and arrangements
4. To rehabilitate and improve conditions of degraded

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<tr>
<th>Issues</th>
<th>Recommendations</th>
<th>Responsible Agencies</th>
<th>Time Frame</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Conflicting policies on the utilization of the resources.</td>
<td>1. Institutionalization of guidelines and technologies in the watershed management. Harmonization of policies.</td>
<td>DENR, Academic Institutions and Congress</td>
<td>2 years</td>
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<tr>
<td>2. Lack of resource information system;</td>
<td>2. Finalized mapping and demarcation of forest lines.</td>
<td>DENR - NAMRIA</td>
<td>5 years</td>
</tr>
<tr>
<td>3. Limited recognition of IK&amp;P in watershed management and the non-integration into research and development thrusts</td>
<td>3. Improved national watershed management information system.</td>
<td>5 years</td>
<td></td>
</tr>
<tr>
<td>4. Lack of integrated mechanisms to unify investments</td>
<td>4. The Master Plan would be the framework to integrate the prioritization of the watershed.</td>
<td>DENR-FMB-LGU-Acad.</td>
<td>Continuing</td>
</tr>
<tr>
<td>5. Lack of common understanding among stakeholders</td>
<td>5. IEC</td>
<td>NSC (DENR-DILG) Leagues</td>
<td>1 year</td>
</tr>
<tr>
<td>6. Lack of unified focus in watershed management</td>
<td>6. MOP on co-management</td>
<td>Congress, CP, DENR, Acadm NGOs, IPs</td>
<td>Continuing</td>
</tr>
<tr>
<td>7. Lack of guidelines to delineate responsibilities between national and local governments</td>
<td>7. Co-management, multi-sectoral approach</td>
<td>1-3 years</td>
<td></td>
</tr>
<tr>
<td>8. Conflicting jurisdictions and roles in watershed areas</td>
<td>8. Clear definition of the functions and authority between and among the co-managers</td>
<td>1-3 years</td>
<td></td>
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<tr>
<td>9. Conflict of policy issuances relative to the utilization of watershed resources</td>
<td>9. Policy and Legislative reforms</td>
<td>1-3 years</td>
<td></td>
</tr>
<tr>
<td>10. Lack of common understanding in watershed as a basic unit in policy planning</td>
<td>10. IEC and training</td>
<td>Continuing</td>
<td></td>
</tr>
<tr>
<td>11. Lack of capability for managing watershed</td>
<td>11. Implement appropriate watershed rehabilitation programs.</td>
<td>Continuing</td>
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</tr>
<tr>
<td>12. LGU-DENR partnership</td>
<td>14. Integrated research and development programs</td>
<td>Forest Managers, Research and Development Institutions</td>
<td>1-2 years</td>
</tr>
<tr>
<td>13. Vast tracks of degraded lands in the watersheds</td>
<td>- Prioritization of our watersheds</td>
<td></td>
<td>1-3 years</td>
</tr>
<tr>
<td>14. Absence of mechanisms for generating sustainable sources of funds</td>
<td>- Formulation of watershed land use plans</td>
<td></td>
<td>1-5 years</td>
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</tbody>
</table>
Group 2. Forest Industries

**Vision:** Rationalized forest-based industries with sustainable sources of raw materials, competitive-market products and improved well-being of workers and people in affected communities.

**Objective:**
1. Development of raw materials

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<th>Responsible Agencies</th>
<th>Time frame</th>
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</table>
| **1. Access of Forestlands**    | 1. Establish permanent forestlands and/or classify forestlands as to the production and protection of forests.  
2. Define clearly jurisdictions between DENR and NCIP  
3. Establish permanent forest production corridors  
4. Re-assess and resume RUPs with natural forests | Congress, DENR, NCIP                 | 5 years continuing           |
| **2. Access to Existing Raw Materials** | 1. Place second growth forests in production forestlands under appropriate tenurial instruments and management systems  
2. Through resources mapping, establish appropriate production areas for rattan, bamboo, and forest plants needed by furniture, handicraft and herbal industries  
3. Deregulate planted trees in forest lands as in A&D lands  
4. Deregulate harvest of naturally growing LUS in A&D lands | DENR                                   | ASAP for priority reasons     |
| **3. Development of New Sources of Raw Materials** | 1. Expedite conversion of expired or expiring TLAs into FMAs  
2. Allocating appropriate non-tenured forestlands for tree and/or forest crop plantation development  
3. Redesign TF, AF, and CBFM systems to include provisions for deregulation, incentives and financial assistance  
4. Amend lumber retail law in order to allow sale of hand | DENR, Industry                        | 1 year                     |
|                                |                                                                               | DENR/Industry                        | 6 months                 |
|                                |                                                                               | DENR/ Congress                       | 6 months                 |
| **4. Development of Technologies/Information including database of potential raw materials** | 1. More focused research on production and utilization of lesser used wood species and non-wood forest products  
2. Develop environment-friendly technologies | DOST, SCUs, DENR                     | Continuing                 |
|                                |                                                                               | DOST, SCUs                           | Continuing               |
### Objective:
1. Rationalization of Forest Industries

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</table>
| 1. Overcapacity/underutilization of Existing Plants | 1. Institute wood rationalization study; establish clear guidelines for the expansion of existing plants and installation of new plants.  
2. Revisit policy on allowing mini mills with long-term raw material supply | DENR, Industry, Academe, DTI, DOST | 1 year |
| 2. Incentives and Investments               | 1. Provide incentives and financial windows for retooling and downstream processing by BOI | BOI                      | 1 year |
| 3. Veneer and Plywood Processing Delisted as BOI Priority for Investment | 1. BOI to list in the investment priority Program                                | BOI                      | 1 year |
| 4. Standards and Certification             | 1. Establish standards for products of forest industries and align same to global development system  
2. Intensify R&D on products development to be globally competitive  
3. Adopt healthy and safety standards in processing plants | DENR, Industry, DOST, Academe DOST | Continuing |

### Objective:
1. Market Competitiveness

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<tr>
<td>1. Domestic Market (competitiveness from Imported Goods)</td>
<td>1. Prevent import surge carried out through smuggling, dumping, under misdeclaration of goods, usually of sub-standard quality.</td>
<td>DENR, DOF, DTI</td>
<td>Continuing</td>
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<tr>
<td>2. Slowdown in the Use of Wood in Local Construction Due to Use of Substitutes</td>
<td>1. Promote the use of wood as effective and efficient material</td>
<td>DENR, Industry, DOST, DTI</td>
<td>Continuing</td>
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<tr>
<td>3. Tariff and Non-Tariff Barriers</td>
<td>1. Slow down tariff reduction and work for the removal of non-tariff barriers imposed by exporting countries</td>
<td>TC and DTI</td>
<td>Continuing</td>
</tr>
<tr>
<td>4. Need Specific Entity to Guide Development of Forest-Based Industry</td>
<td>1. Establish a Forest industry Board</td>
<td>Congress</td>
<td>1 year</td>
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</tbody>
</table>
### Workshop Results (Workshop 2, SEARCA Auditorium, Los Baños, Laguna, July 10-11, 2003)

#### Group 1. Education and Training for Forestry R&D

**Vision:** Globally competitive and excellent forestry education and training in R & D relevant and responsive to the changing needs of the forestry sector and society.

**Objectives:**
1. To produce forestry professionals possessing knowledge, skills and values for undertaking meaningful and cutting edge research and technology transfer.
2. To strengthen organizational/institutional mechanisms for enhanced research productivity and efficient use of resources for research.

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</table>
| 1. Curriculum                             | -declining quality of forestry education  
-Non-popularity of forestry as a career option  
-Non-updated forestry curriculum  
-Laxity in admission requirement  
-Inadequate education background  
-Proliferation of forestry schools       | • Rationalize forestry education  
• Adopt standard forestry curriculum  
• Update regularly forestry curriculum  
• Close substandard forestry schools  
• Conduct demand assessment for forestry graduates | CHED, UPLB, SUCs      | Every three (3) years |
| 2. HRD                                    | -Weak basic education/ training for some personnel holding technical positions  
                                            | • Follow-up. Monitor and evaluate trainings conducted  
• Provide/facilitate local and international training facilities  
• Conduct training needs and impact assessment | DENR, Academe, CHED, LGUs and NGOs | 10 years |
| 3. Linkages                               | Develop strong linkages between forestry educational institutions and employers  
• Institute adequate feedback mechanisms among education-research-development institutions  
• Strengthen forestry professional organizations | All concerned agencies | Periodic |
| 4. Facilities, equipment and infrastructure| • Acquire/build state-of-the-art equipment and R & D facilities  
• Institute mechanism for sharing equipment among research institutions | All concerned agencies | 10 years |
| 5. Employment                             | -Unemployment  
-Job security                                      | • Create employment opportunities | All concerned agencies | 10 years |
| 6. Forestry technologies                   | -Inadequate transfer of technologies  
                                            | • Implement an integrated and intensified technology transfer program  
• Generate demand driven technologies  
• ID of tech adoptors | All concerned agencies | Periodic |
| 7. Funding support                         | -Inadequate budget for forestry education and training  
-No funds to support recruitment  
-Insufficient R & D budget                  | • Develop strong linkages with foreign funding agencies  
• Campaign for an enabling law for the MPFD implementation  
• Enhance capability of forestry education and | All concerned agencies, fund sources | 20 years |
8. Conformity to MPFD of R&D thrusts by D&D institutions
- Fragmented research

- Development of a unified R & D protocol
  - Integrated research

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<td></td>
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<td>PCARRD, all R &amp; D institutions</td>
<td>3 years</td>
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9. Participatory Research
- No emphasis in curriculum

- Incorporate concept and practice of participatory research in curriculum
- Encourage conduct of participatory research

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<td></td>
<td></td>
<td>All R &amp; D institutions</td>
<td>3 years</td>
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**Group 2. Education and Training for Forestry Institutional Management and Administration**

**Vision:** Institutions that are effective, capacitated, committed, responsive, efficient, competent and committed to people-centered sustainable forest management.

**Objective:** Develop highly qualified, fully informed and competitive human resources with proper value orientation towards the attainment of sustainable forest management in an environment facilitative of unified efforts among stakeholders.

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<th>Time Frame</th>
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</table>
| 1. Governance
  - Devolved functions not fully implemented due to lack of resources, capacity & orientation
    - Need to define & clarify roles of institution in the face of the changing framework in forestry sector
    - Lack of representation/lobbying, advocacy on forestry issues in both the legislative & executive branch
    - Inadequate support systems (facilities, HRD, budget) to forestry training & education
    - Weak legislative & executive support to the forestry sector |
  - Institutionalize ENRO among LGUs
  - Provide technical, financial, training, education, institutional support for the implementation of the devolved functions
  - Provide capability support & education to empower civil society
  - Redefine/clarify roles of institutions and stakeholders
  - Strengthen advocacy of the forestry in the legislative & executive branches |
|        |                 | State (DENR), Academe, LGUs, SFF, DBM | 1-5 years |

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| 2. Training
  - Lack or inadequate integration of indigenous knowledge in education & training
  - Training the wrong person
  - Not organically generated training modules |
  - Conduct affordable & dynamic continuing education programs in forestry
  - Conduct rationalized human power training programs & learning activities
  - Provide appropriate/relevant training to various institutions
  - Appropriate training for stakeholders to address SFM-Generate training modules from the experiences of the upland communities to reflect indigenous knowledge systems, etc.
  - Provide training & education relevant to |
|        |                 | All stakeholders | Continuing |

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<th>Time Frame</th>
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<tbody>
<tr>
<td>1-5 years</td>
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<td>1-3 years</td>
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<td>1-5 years</td>
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<td>1-3 years</td>
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<tr>
<td>Issues</td>
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</table>
| 3. Curricular Matters | - Rationalization of forestry profession  
- Review of present curricula  
- Ramification of forestry practice (non-board course or skills dev’t e.g. urban forestry, mountain engg., etc.)  
- Rationalize forestry schools through stringent screening & monitoring of their performance or quality  
-- Upgrading of forestry curricula to include recent needs  
- Curriculum strengthening & dev’t  
- Integrate forestry education in the elementary & secondary curricula | All stakeholders | 3-5 years  
1-2 years  
1-3 years  
1-5 years |
| 4. IEC Services | - Establish infrastructure for info or techno transfer  
- Revitalize forestry extension program (RA 3523)  
- Enforce PD 331  
- Review mechanisms in the formulation of board exams  
- Ensure that the board exam curriculum is reflective of the current forestry curricula (re: values/ethics, recent dev’ts in forestry | All stakeholders | 3-5 years  
1-5 years  
1-3 years  
Continuing |
| 5. Negative public perception on forestry sector | - Revitalize IEC on forestry sector (activities, functions, etc.)  
- State (DENR) must yield some of its powers to civil society (reorganization, devolution)  
- Promote service-oriented personnel (re: change of hearts | DENR/Forestry Sector | Continuing  
1 year  
Continuing |

**Workshop Results (2003 Workshop 3, Four Seasons Hotel, Iloilo City, July 22, 2003)**

**Group 1. Non-Timber Forest Products (NTFP) Production**

**Vision:** A progressive, productive, and globally competitive NTFP sector for sustainable resources and socio-economic development.

**Objectives:**
1. Develop a sustainable resource base NTFP;
2. Provide viable livelihood opportunities;
3. Develop appropriate production technologies;
4. Establish a favorable policy environment to sustainably develop the NTFP sector;
5. To attain an equitable sharing of costs and benefits among stakeholders;
6. To develop an organized, cohesive and united NTFP sector;
7. To promote development and management of NTFP for environmental protection and biodiversity.

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</thead>
</table>
| **A. POLICY AND TECHNOLOGY**                                         | - Support Policy R&D for specific species and to promote ecosystem-based production and utilization and equitable access to NTFP  
- Review policy on the use of rattan deposit                          | DENR, FDC, FMB, ERDB-ERDS, Other research agencies/instiutions                                  | 3-5 years  |
| Lack of policy for specific NTFP, ecosystem-based production and utilization, and equitable access to NTFP |                                                                                                      | DENR, FMB, NGO, LGU                                 | Continuous |
| Poor dissemination and implementation of policy                       | - Strengthening IEC and M&E                                                                            | DENR, FMB, NGO, LGU                                 | Continuous |
| Lack of information on stakeholders’ access to formal support system (e.g., credit coops, credit loans) | - Interagency linkages to develop mechanisms to enhance access  
- Multi-sector strengthening                                                | DENR, DA, TESDA, DTI, Private sector, Financial Institutions                                         | 10 years   |
| Lack of information on resource species (resource assessment methods, distribution, growth and yield, reproductive biology, sustainable harvest, etc.) | - Generation of information and technology thru R&D  
- Formulation of resource assessment methods (inventory, etc.)                    | ERDB, FDC, PCARRD, SCU, Research Institutes                                                    | 5 years    |
| **B. RESOURCE DEVELOPMENT, CONSERVATION AND PROTECTION**             |                                                                                                      | DENR                                         | 5 years    |
| Lack of updated and comprehensive data                               | - Establish resource mapping and information system (GIS), natural stands, planting materials          | DENR                                         | 5 years    |
| High cost of production (i.e. rattan)                                | - Promote efficient utilization of resources  
Reduce cost of production through development of improved ergonomics, plantation and harvesting tools | DENR, FPRDI stakeholders                    | 5 years    |
| Inadequate information on genetics and rep biology of resource species | - Conduct genetic studies, establish genetic conservation areas implement breeding/varietal improvement activities | Academe, ERDB, Research Institutes           | 5-10 years |
| Lack of awareness on NTFPs ecological, economic, social, and cultural aspects | - Strengthen IEC campaigns                                                                          | All concerned agencies                      | Continuous |

**Group 2. Non-Timber Forest Product Utilization**

**Vision:** Non-timber forest-based industries with sustainable supply of raw materials for the production of economically viable and globally-competitive products to uplift the socio-economic well-being of upland communities and other stakeholders without impairing the other ecological value of the area.
<table>
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<th>Responsible Agencies</th>
<th>Time Frame</th>
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<tbody>
<tr>
<td>A. Difficulty conducting inventory of raw material before harvesting                                                                                                                                 1. Existing guidelines do not provide authority to RED/ PENRO/CENRO in the granting of permit for the harvesting/utilization of planted NTFPO within IFMA/ SIFMA/TREE FARM/ITP area.</td>
<td>A. Authorize licensed forester to conduct inventory;</td>
<td>DENR, SFFI</td>
<td>Within 3 years</td>
</tr>
</tbody>
</table>
| 2. No comprehensive policy on NTFP  
  • No reliable survey of existing public and private plantation  
  • Not readily accessible to users                                                                                                                       | 1. Amendment of policies with regard to issuance of permits.                                                                                                                                                   | FMB, ERDB, DENR      | Within 3 years |
| 2. Database information of NTFP based on existing researches/studies identify areas through resource mapping.                                                                                       | 2. Database information of NTFP based on existing researches/studies identify areas through resource mapping.                                                                                             |                      | Within 3 years |
| 3. Low quality of finished products                                                                                                                                                                  3. Establishment of processing plant/furniture shop with skilled laborers.                                                                                                                                  | DTI, Academe, TESDA, Manufacturers ERDB, FMB, DENR                                                                                                                                                    |                      | Within 3 years |
| 4. Insufficient technology transfer of NTFPs and lifting of ban on exporting bamboo (selective)                                                                                                         4. Preparation of IEC material for technology transfer.                                                                                                                                                   | ERDB, ERDS                                                      |                      | Within 3 years |
| 5. Non-availability of technology at source                                                                                                                                                             Technology should be available at source                                                                                                                                                        | ERDB, ERDS, DENR, DTI | Within 3 years |
| 6. Raw materials directly sold to manufacturers                                                                                                                                                         Organization of farmers/ planters into cooperatives to avail financial assistance to manufacture their own products                                                                                 | LGU, PO, CDA, Chamber of commerce, banks, financial institutions                                                                                                                                         |                      | Within 3 years |
| 7. Low quality of finished products                                                                                                                                                                    Development of product standards in accordance with ISO                                                                                                                                                 | BPS Bureau of Product Standards                                                                                        |                      | Within 3 years |
| Issues                                                                                                                                                                                                 | Recommendations                                                                                                                                                                                                 | Responsible Agencies | Time Frame |
| 8. Institutional/HRD Research results should reach the proper clientele                                                                                                                                 Part of IEC component                                                                                                                                                        | DENR/other research institutions                                                                                        |                      | Within 3 years |
| Lack of skilled personnel on the conduct of proper utilization of technologies                                                                                                                           Conduct of trainings                                                                                                                                                                               | DENR/ FPRDI/ ERDB                                              | Within 3 years |
9. Marketing
Lack of comprehensive study on demand and limited market outlets of NTF products

- Organize small-scale traders into a federation to supply the foreign/local demands for finished products
- Inventory of potential markets vis a vis demand analysis
- Establish incentive mechanisms
- Establish linkage/network with foreign/local traders and/or markets

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<th>Time Frame</th>
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</table>
| 1. Need for policy reforms:  
• Land-use  
• Resource utilization  
• Conflicting policies  
• Unclear policies (open to different interpretations) | Policy and legislative reforms (to address conflicts, overlaps, land-use, ambiguous policies) | DENR, ERDB, FMB, SFF, FDC, LGUs, MGB | 1-5 years |
| 2. No comprehensive watershed development plans |  
• Develop database  
• Characterization of watersheds  
• Prioritization, classification of WS  
• Management zoning and demarcation  
• Harmonization of watershed plans with CLUP  
• R&D |  
DENR, LGUs, PAMB, POs, NGOs, MGB, Other stakeholders | 10 years (all watersheds) |
| 3. Political boundary vs. watershed boundary as management unit |  
• Strengthen linkage with and between LGUs  
• IEC campaigns  
• Harmonization of WS plans with CLUP | LGUs, POs, Civil Society, DENR (act as secretariat) | 1-3 years |

10. Product development

- Improve product design and retooling of machineries

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<tr>
<td>Improve product design and retooling of machineries</td>
<td></td>
<td>FPRDI, DTI, BPS</td>
<td>Continuing</td>
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11. Support systems in terms of financing, R&D, manpower dev’t

- Government to provide incentives and support systems

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<td></td>
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<td>DENR, Concerned agencies</td>
<td>Continuing</td>
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Workshop Results (Workshop 4, Cebu Business Hotel, Cebu City, July 24-25.)

Group 1. Watershed Management

Vision: Developed watersheds sustainably managed by empowered Stakeholders for prosperity.

Objectives:
1. To protect, rehabilitate, manage and develop watersheds and its resources for improved socio-economic conditions
2. To develop a watershed resources information/database
3. To encourage participation of local communities, LGUs,  
   a. private sector and other stakeholders in watershed management  
   b. management
4. To promote sustainable utilization of watershed resources

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• Land-use  
• Resource utilization  
• Conflicting policies  
• Unclear policies (open to different interpretations) | Policy and legislative reforms (to address conflicts, overlaps, land-use, ambiguous policies) | DENR, ERDB, FMB, SFF, FDC, LGUs, MGB | 1-5 years |
| 2. No comprehensive watershed development plans |  
• Develop database  
• Characterization of watersheds  
• Prioritization, classification of WS  
• Management zoning and demarcation  
• Harmonization of watershed plans with CLUP  
• R&D |  
DENR, LGUs, PAMB, POs, NGOs, MGB, Other stakeholders | 10 years (all watersheds) |
| 3. Political boundary vs. watershed boundary as management unit |  
• Strengthen linkage with and between LGUs  
• IEC campaigns  
• Harmonization of WS plans with CLUP | LGUs, POs, Civil Society, DENR (act as secretariat) | 1-3 years |
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<tr>
<td>• Establishment of multi-sectoral WMC</td>
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<td>4. Political interference</td>
<td>• IEC campaigns</td>
<td>DILG, DENR</td>
<td>continuous</td>
</tr>
<tr>
<td>5. Absentee claimants</td>
<td>• Improved enforcement of laws</td>
<td>DENR, LGUs</td>
<td>1 year</td>
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<td></td>
<td>• Issuance of tenurial instruments to bonafide claimants</td>
<td>DENR</td>
<td>5 years</td>
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<td>• Improved coordination with DILG on the issuance of tax declarations</td>
<td>DILG</td>
<td>1 year</td>
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<tr>
<td>6. Delayed approval of PA General Management Plan</td>
<td>• Legislative reforms (i.e. decentralize approval of the PA General Management Plan)</td>
<td>DENR in cooperation with Congress</td>
<td>5 years</td>
</tr>
<tr>
<td>7. High population growth rate in watershed areas</td>
<td>• IEC campaigns</td>
<td>DENR, POPCOM</td>
<td>continuous</td>
</tr>
<tr>
<td>8. Misconceptions and lack of understanding by various sectors on watersheds, its utilization and management</td>
<td>• IEC campaigns</td>
<td>DENR, PAMB, LGUs, Academe, SFF</td>
<td>continuous</td>
</tr>
<tr>
<td></td>
<td>• Strengthen PAMB</td>
<td></td>
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<tr>
<td>9. Lack of impact studies on different land-use options</td>
<td>• R&amp;D</td>
<td>DENR, Academe, ERDB, Other Research Institutes</td>
<td>continuous</td>
</tr>
<tr>
<td>10. Slow process of downloading shares of LGUs from collected resource use-fees</td>
<td>• Facilitate development of trust funds</td>
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**Group 2. Urban Forestry, Mangrove, Coastal and Marine Resource Management**

**A. Urban Forestry**

**Vision:** An urban area with lush vegetation, cool and fresh air for the psychological, physiological, and economic well-being of the dwellers through sustainable management

**Objectives:**

1. To establish urban forest sufficient for: (a) carbon sink; (b) abatement of noise, air and sight pollutants; (c) amelioration microclimate and (d) windbreaks
2. Mun., city, LGUs and stakeholders implementing urban forestry
3. Enhance collaboration with government, private sector, NGOs, POs, Academe
4. Prepare a short-term and long term master plan for urban forestry
5. Create an office that will cater to the urban forestry program
6. To landscape urban places with trees and other vegetation such as ground and compound landscaping, vegetation establishment in vacant lots and private landowners
7. To develop/strengthen IEC strategies on the importance of urban forestry
8. To enact enabling ordinances, resolutions and other issuances that would enhance, and sustain the urban greening program
9. To establish and sustainably-manage microforest and park for city or municipality
10. To formulate IRR for PD 953
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</table>
| **Policy**                                                            | 1. A body or task force to formulate a generic ordinance to serve as guide in the passage of local ordinance on UF in each LGU;  
2. DILG to issue administrative order for the integration of UF in city and municipal dev’t plans  
3. Policy/program to encourage decongestion in urban areas coordination with concerned agencies  
4. Revise/update PD 953                                                                 | DENR, DILG, LGU, DPWH   and utility services       | 3 years     |
| 1. Lack of tree protection ordinances/lax in implementation of existing laws |                                                                                                                                                |                          |            |
| 2. Non-integration of urban forestry in city/municipal development plans |                                                                                                                                                |                          |            |
| 3. Ineffective urban population and migration control policies/programs |                                                                                                                                                |                          |            |
| 4. Conflicting interpretation of PD 953 and overlapping jurisdictions  |                                                                                                                                                |                          |            |
| **Technology and Information**                                        | 1. Conduct of review and researchers on the silvicultural studies of species for UF  
2. Conduct comprehensive inventory and characterization of all existing and prospective UF/greening sites – output to be used for master planning  
3. Preparation of planting plan/landscape design in coordination with concerned agencies in accordance with development plan of area; include landscape dev plan of all gov infra in urban areas | ERDB/ERDS, DENR, LGU, | 5 years     |
<p>| 1. Insufficient or lack of silviculture studies on UF                  |                                                                                                                                                |                          |            |
| 2. Lack/absence of site survey and characterization prior to planting results incompatible species planted and expensive maintenance activities required |                                                                                                                                                |                          |            |
| 3. Lack of appropriate design or planting pattern and species coordinating to avoid monotony of landscape |                                                                                                                                                |                          |            |
| 4. New program without doing evaluation, every change in administration|                                                                                                                                                |                          |            |
| 5. Absence of master plan on urban forestry development for Metro Manila and other cities/municipalities in the Phil |                                                                                                                                                |                          |            |
| 6. Lack of organizational capability of concerned DENR and LGU offices in terms of manpower, facilities, equipment, tools and financial resources |                                                                                                                                                |                          |            |
| <strong>M &amp; E</strong>                                                             | Create innovative fund sourcing scheme for UF dev – e.g. green taxes to polluted factories                                                                 | DENR, DILG and LGUs     | 3 years     |
| 1. No M&amp;E on UF development                                           |                                                                                                                                                |                          |            |
| 2. No monitoring and evaluation of policy and programs                 |                                                                                                                                                |                          |            |</p>
<table>
<thead>
<tr>
<th>Issues</th>
<th>Recommendations</th>
<th>Responsible Agencies</th>
<th>Time Frame</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>IEC</strong>&lt;br&gt;1. Public indifference to urban greening programs&lt;br&gt;2. Insufficient circular program on UF&lt;br&gt;3. Lack of information materials on UF</td>
<td>1. Forge close ties with the media (for info dissemination) and youth sectors (for implementation) of UF programs&lt;br&gt;2. Incorporate more courses on UF in BSF curriculum&lt;br&gt;3. Intensify IEC through tri-media advocacy work</td>
<td>DENR, DILG, LGU, NGOs</td>
<td>3yrs</td>
</tr>
<tr>
<td><strong>Others</strong>&lt;br&gt;1. Vandalism/indifference or apathy by general public on street trees, park trees and other vegetation&lt;br&gt;2. Uncontrolled squatting on parks, street corridors, etc due to laxity in implementing laws</td>
<td>1. Strict implementation and enforcement of laws&lt;br&gt;2. IEC</td>
<td>DENR, DILG, LGU, NGOs, academe</td>
<td>5 years</td>
</tr>
</tbody>
</table>

**Group 3. Furniture, Handicraft and Herbal Industries**

**A. Herbal Industry**

**Vision**: A progressive, productive and globally competitive herbal industry from sustainable forest resources for socio-cultural and economic development

**Objectives**

1. To encourage the participation of stakeholders in the sustainable development and management of resources for the herbal industry;
2. To establish favorable policy environment for the development and expansion of the herbal industry;
3. To develop appropriate production technologies and standards;
4. To provide viable livelihood opportunities;
5. To promote equitable sharing of costs and benefits of stakeholders;
6. To promote the development and management of the herbal industry for environmental protection and biodiversity conservation;
7. To document indigenous knowledge on the source and use of plants with therapeutic value

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<thead>
<tr>
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</thead>
<tbody>
<tr>
<td><strong>1. Policy</strong>&lt;br&gt;• Stringent policy on harvesting and transport of herbal raw materials;</td>
<td>• Stakeholders participation in review and revision of related policies.</td>
<td>DENR field offices; ERDB; Industry DOH, BFAD</td>
<td>1 year</td>
</tr>
<tr>
<td>• No available standards for quality control of raw materials</td>
<td>Develop applicable and appropriate standards</td>
<td>ERDB; ERDS; FMS; PAWB; Research Institutions, DOST, BPS, FPRDI</td>
<td>1-5 years</td>
</tr>
<tr>
<td>Issues</td>
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</tr>
<tr>
<td><strong>2. Technology R&amp;D</strong></td>
<td>• Lack of Package of technology (i.e. production, harvesting and processing)</td>
<td>• Develop POT for the forest based raw material requirements of herbal industry</td>
<td>ERDB, ERDS, SCUs, Res. Inst.; DAR and DA</td>
</tr>
<tr>
<td></td>
<td>• No established genebanks of herbal plants in strategic areas of the country</td>
<td>• Establishment of herbal genebanks in strategic areas</td>
<td>ERDB; DENR-ERDS; Research Inst.; Industry; Private sector; DECS;</td>
</tr>
<tr>
<td><strong>3. Information</strong></td>
<td>• Slow transfer or extension of existing technologies</td>
<td>• Aggressive and effective transfer of research results/technologies to appropriate clients</td>
<td>DENR; FMB; ERDB, ERDS; PAO; RPAO</td>
</tr>
<tr>
<td></td>
<td>• Lack of data base on sources of raw materials</td>
<td>• Conduct taxonomic studies; resource inventory and mapping</td>
<td>DENR; FMB; PAWB; NAMRIA</td>
</tr>
<tr>
<td></td>
<td>• Non awareness of some stakeholders (herbal industry etc.) on the bio-prospecting law</td>
<td>• Strengthen IEC campaigns</td>
<td>DENR field offices; PAWB; ERDB; Industry</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Simplify IEC materials</td>
<td></td>
</tr>
<tr>
<td><strong>4. Institutional Issues</strong></td>
<td>• Weak linkaging among stakeholders</td>
<td>• Strengthen multi-sectoral coordination/networking</td>
<td>DENR; LGU; POs and other concerned stakeholders;</td>
</tr>
<tr>
<td></td>
<td>• Inadequate institutional support system for marketing, credit, and technology</td>
<td>• Provide access to institutional support system</td>
<td>DENR; Financial/funding institutions; investors</td>
</tr>
<tr>
<td><strong>5. Human Resources Development</strong></td>
<td>• Insufficient technical training programs for the stakeholders</td>
<td>• Conduct more training programs/activities for capacity building</td>
<td>DENR; Industry, TESDA; DOST; TLRC</td>
</tr>
<tr>
<td><strong>6. Monitoring and Evaluation</strong></td>
<td>• No existing monitoring and evaluation system for herbal industry</td>
<td>• Develop criteria and indicators for M&amp;E</td>
<td>DENR; FMB; LGU; PCARRD</td>
</tr>
</tbody>
</table>
B. Furniture And Handicraft Industries

**Vision:** Progressive, productive, and globally competitive furniture and handicraft industries from sustainable resources for socio-economic development.

**Objectives:**
1. Develop sustainable resource base for the furniture and handicraft industries;
2. Provide viable livelihood opportunities;
3. Develop appropriate production technologies;
4. Establish favorable policy environment to sustain the furniture and handicraft industries;
5. To promote equitable sharing of costs and benefits among stakeholders;
6. To harmonize the development and management of raw materials and environmental protection and biodiversity conservation.

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</thead>
<tbody>
<tr>
<td>A. Policy and Technology</td>
<td>Support Policy R&amp;D studies for specific species and to promote ecosystem-based production and utilization and equitable access to wood-based and NTFP</td>
<td>DENR, FDC, FMB, ERDB-ERDS, Other research agencies/insti tutions</td>
<td>3-5 years</td>
</tr>
</tbody>
</table>
| Inconsistent policies on NTFP and wood-based production and utilization, and equitable access to raw materials | Policy review  
- Strengthening IEC and M&E | DENR, FMB, NGO, LGU, BPS, DOST, FPRDI | Continuous |
| Poor dissemination and implementation of policies (grading and quality standards for lumber, rattan, bamboo, etc.) | Interagency linkages to develop mechanisms to enhance access  
- Multi-sector strengthening | DENR, DA, TESDA, DTI, Private sector, Financial Institutions | 10 years |
| Lack of information on stakeholders’ access to formal support system (e.g., credit coops, credit loans) | Generation of information and technology thru R&D  
- Formulation of resource assessment methods (inventory, etc.) | ERDB, FDC, PCARRD, SCU, Research Institutes | 5 years |
| Lack of strong linkage between production and market | Establish product-market match  
- Strengthen market intelligence | DENR, CITC, DTI, Private Sector | 10 years |
| Weak integration of the planting of wood-based and NTFPs in CBFM, IFMA, SIFMA, etc. | Site identification and species matching of NTFPs and wood species for furniture | DENR, FMB, private sector | 1-5 years |

B. Resource Development, Conservation and Protection

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<tbody>
<tr>
<td>Lack of updated and comprehensive data</td>
<td>Establish resource mapping and information system (GIS), natural stands, planting materials</td>
<td>DENR</td>
<td>5 years</td>
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</tbody>
</table>
| High cost of production (i.e. rattan)                          | Promote efficient utilization of resources  
- Reduce cost of production through development of improved ergonomics, plantation and harvesting tools, assisted | DENR, FPRDI, DOST stakeholders, | 5 years |
<table>
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<tbody>
<tr>
<td>natural regeneration</td>
<td></td>
<td>FMB, ERDB, Research Institutes</td>
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<tr>
<td>Inadequate information on genetics and rep biology of resource species</td>
<td>• Conduct genetic studies, establish genetic conservation areas implement breeding/varietal improvement activities</td>
<td>Academe, ERDB, Research Institutes</td>
<td>5-10 years</td>
</tr>
<tr>
<td>Lack of awareness on NTFPs ecological, economic, social, and cultural aspects</td>
<td>• Strengthen IEC campaigns</td>
<td>All concerned agencies</td>
<td>Continuous</td>
</tr>
</tbody>
</table>

**Workshop Results (Supreme Hotel, Baguio City, July 30-August 1, 2003)**

**Group 1. Watershed**

**Vision:** A sustainably managed watershed in partnership with various stakeholders providing the necessary life support for hydro-ecological cultural and economic security

**General Objectives**
To harmonize watershed management activities to attain optimum production of goods and services thru a well defined and delineated watershed boundaries for efficient and effective management

**Specific Objectives**
1. Enhance socio-economic conditions of watershed-dependent communities without impairing the bio-physical productivity of watershed
2. Ensure commitment and full support to watershed management activities.

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</thead>
<tbody>
<tr>
<td>1. Conflicting policies, overlapping laws, duplication of functions and power by concerned institutions and organization.</td>
<td>In-depth policy review/analyses and reformation:</td>
<td></td>
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<tr>
<td>2. Extensive coverage of watershed</td>
<td>Sub-watershed components</td>
<td></td>
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<tr>
<td>3. Conflicts arising from water rights (user’s fee, compensation)</td>
<td>Imposition of users’ fee for management, maintenance and protection of watersheds and to attract private investors.</td>
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<td>4. Incomplete data base (conflicting and not uniform data)</td>
<td>Updated data and information system/reconciled, synchronized and harmonized data base.</td>
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<td>5. Tenurial Arrangements</td>
<td>Strict implementation of laws; inventory and census of occupants, coordinated efforts on tenurial arrangements.</td>
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<td>6. Improper pricing of goods and sources.</td>
<td>Imposition of penalty to be determined thru legal process.</td>
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<tr>
<td>7. Lack of investors in watershed development</td>
<td>Continuous implementation of watershed management programs despite the changes in government leadership; integration and legislation of watershed management and in municipal provincial levels</td>
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<tr>
<td>8. Encroachment and squatting</td>
<td>Restoration of vegetative cover using appropriate species for biodiversity enhancement, water yield improvement and site stability.</td>
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<tr>
<td>9. Lesser priority in LGU’s functions/inadequate capabilities on devolved functions.</td>
<td>Intensification of information, education and communication thru the use of various media.</td>
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<tr>
<td>10. Political interference</td>
<td>Enhancement of production systems focused on livelihood and non-timber crops and other appropriate species to be established in suitable areas (land capability and suitability assessment).</td>
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<td>11. Fast turn over of leadership</td>
<td>Provision of sufficient funding thru linkaging with prospective funding institution.</td>
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<td>12. Continuous loss of biodiversity</td>
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<td>13. Continuous occurrences of environmental problems</td>
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<td>14. Insufficient funds</td>
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<td>15. “Planning Blues” exclusion of watershed concerns in planning of livelihood projects</td>
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<td>16. Conversion of forests into other uses.</td>
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<td>17. Inadequate manpower</td>
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<td>18. Non-enactment of SFMA</td>
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<td>19. Insufficient public information strategies and social marketing</td>
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<tr>
<td>20. Inadequate delivery of basic services</td>
<td></td>
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<tr>
<td>21. Lack of alternative livelihood and incentives for the defendant communities.</td>
<td>Give Incentive to the people who are really protecting the watershed and penalty for those who are not.</td>
<td></td>
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<tr>
<td>22. Inadequate identification of species compatible with water retention.</td>
<td>Suitability, compatibility and adaptability of the species being used in watershed plantations should be studied.</td>
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**Group 2. Protected Area Management and Biodiversity**

**NBSAP Vision:** A society of empowered, self-reliant Filipinos, well-informed of environment-development relationships, with state-recognized individual and collective rights specially of the indigenous peoples, and nurtured by their sustainable use of the country’s biological resources.

**Vision for Forest Biodiversity:** Envisions a forest biodiversity sustainably managed for the present and future generations.

**Goals:**
1. To reduce the threats and mitigate the impacts of threatening processes on FBD
2. To apply the ecosystems approach to the management of forests
3. To reduce current rate of forest biodiversity loss by 2010
### Objectives

1. **Protection and Restoration of FBD**
   - To protect and conserve the remaining forests and other biological resources of the country
   - To restore and/or recover FBD
   - To promote forest management practices that further the conservation of endemic and threatened species
   - To mitigate the impacts of pollution such as acidification on FBD
   - To mitigate the negative impacts of climate change
   - To prevent and mitigate the adverse effects of forest fires

2. **FBD Monitoring and Evaluation**
   - To develop practical methods, guidelines, indicators, and strategies for FBD M&E,
   - To conduct periodic assessment of Forest land uses
   - To promote and adopt BMS as a tool for monitoring trends in changes in FBD and land uses

3. **Harmonizing Research with Conservation Needs**
   - To undertake carrying capacity and resource valuation studies
   - To build broader support for PAs
   - To alleviate poverty in the uplands
   - To review and update current Forestry policies vis-à-vis FBD
   - To address the effectiveness of forest and forest-related law enforcement and implement policies that counter the negative impacts on Biodiversity

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</tr>
</thead>
<tbody>
<tr>
<td>1. Inadequate skills and knowledge, i.e. species identification and inventory</td>
<td>1. Trainings and capacity building (Forestry Science, Conservation Science; Sustainable development, carrying capacity)</td>
<td>DENR, Academe, National Museum, Research Institutions</td>
<td>1-5 yrs</td>
</tr>
<tr>
<td>2. Ground demarcation of Forest lands, e.g. Production areas, protection areas, restoration</td>
<td>2. Provision of funds and manpower</td>
<td>DENR, LGUs, and stakeholders</td>
<td>1-5 yrs</td>
</tr>
<tr>
<td>3. Protection of residual forest rather than reforest areas that may redound to nil result.</td>
<td>3. Management should support the action by providing/channeling reforestation fund to protection.</td>
<td>DENR</td>
<td>1-5 yrs</td>
</tr>
<tr>
<td>4. NIPAS Act and IPRA Inconsistencies</td>
<td>4. Policy harmonization; Evolve creative and facilitative management structures</td>
<td>DENR, NCIP</td>
<td>1-2 yrs</td>
</tr>
<tr>
<td>5. Biological pollution</td>
<td>5. Biosafety (Cartagena Protocol) and biohazard screening, To control, prevent and mitigate impacts of invasive alien species</td>
<td>DENR, LGUs, DOH, DOST, IPs, DA Academe</td>
<td>1-5 yrs</td>
</tr>
<tr>
<td>6. Habitat rehabilitation</td>
<td>6. Site rehabilitation/restoration</td>
<td>DENR, Academe, LGUs, NGOs</td>
<td>1-5 yrs</td>
</tr>
<tr>
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<tr>
<td>7. Extinction of Species and genetic resources</td>
<td>7. In Situ and Ex-Situ conservation</td>
<td>DENR, Academe, LGUs, NGOs</td>
<td>1-5 yrs</td>
</tr>
<tr>
<td>8. Severe disturbance in ecological and evolutionary process</td>
<td>8. Ecosystems rehabilitation</td>
<td>DENR, LGUs, Academe, Research Institutions, NGOs</td>
<td>1-5 yrs</td>
</tr>
<tr>
<td>9. Erosion of Indigenous Knowledge</td>
<td>Documentation and transfer of indigenous knowledge; Streamline current FPIC process</td>
<td>DENR, LGUs, NCIP, IPs, DPOs</td>
<td>yrs</td>
</tr>
<tr>
<td>10. Management constraints</td>
<td>Boundary delineation, women’s involvement in national planning</td>
<td>DENR, LGUs, DPWH, POs</td>
<td></td>
</tr>
<tr>
<td>11. Local Interest, rights concerns</td>
<td>Consultation with stakeholders</td>
<td>DENR, LGUs, POs, IPs, Academe</td>
<td>1-5 yrs</td>
</tr>
<tr>
<td>12. Development Potential</td>
<td>Bioprospecting, Biotechnology, Intellectual Property Rights, Ecotourism</td>
<td>DENR, LGUs, NGOs, Academe, POs, DOT</td>
<td>-5 yrs</td>
</tr>
<tr>
<td>13. Access and Benefit sharing from FBD</td>
<td>IEC on IPR for IPs and other stakeholders</td>
<td>DENR, LGUs, Academe, NGOs, PAs, DOT</td>
<td>-5 yrs</td>
</tr>
<tr>
<td>14. Biodiversity zones/areas outside PAs</td>
<td>Develop guideline for the establishment of biodiversity zones in consultation with all stakeholders</td>
<td>DENR, LGUs, Academe, NGOs, POs, IP s, stakeholders</td>
<td>1-5 yrs</td>
</tr>
</tbody>
</table>

**Group 3. Pine and Mossy Forest Management**

**Vision:** A sustainably managed pine and mossy forest resources providing benefits consistent with ecological stability for socio-economic well-being.

**Objectives:**
1. To provide equitable access to forest resources and benefits;
2. To integrate sustainable indigenous forest management practices and utilization in pine forest;
3. To promote the efficient utilization of NWFP/NTFP for enterprise development;
4. To promote multiple use mgt of pine and mossy forest;
5. To provide mechanisms for effective and efficient coordination among agencies and stakeholders through co-mgt and equitable profit sharing approach;
6. To promote eco-tourism within pine and mossy forest;
7. To promote the establishment of Pine Forest PlantationTo develop a comprehensive R & D Program for pine and mossy forests.
### A. Policy/Legislative Agenda:

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<tbody>
<tr>
<td>Restriction in cutting in areas w/ an elev. of 1000m asl or 50% slope affecting utilization in pine forest</td>
<td>Review policy to allow limited cutting on said areas</td>
<td>DENR-LGU, NCIP</td>
<td>1-5 yrs.</td>
</tr>
<tr>
<td>No policy on old plantation management</td>
<td>Conduct inventory on extent of Old pine pltns in aid of policy formulation</td>
<td>DENR, LGU</td>
<td>1-5 yrs</td>
</tr>
<tr>
<td>Clearing of pine &amp; mossy forests for agriculture (land conversion)</td>
<td>Promote &amp; strengthen the Co-Mgt approach to forest mgt.</td>
<td>DENR-LGU, NCIP-DILG</td>
<td>1-5 yrs</td>
</tr>
<tr>
<td>Restriction on the harvesting within traditionally managed &amp; established forests</td>
<td>Formulate policy to allow limited cutting for personal use; encourage establishment of more pine pltns</td>
<td>DENR, LGU, community</td>
<td>1-5 yrs</td>
</tr>
<tr>
<td>- Conflict in IPRA &amp; PD 705</td>
<td>Harmonization of Policy &amp; Laws on Pine Forest</td>
<td>DENR, NCIP &amp; other stakeholders</td>
<td>1-5 years</td>
</tr>
<tr>
<td>- Traditional ownership and adverse claims</td>
<td></td>
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<tr>
<td>Non delineation of permanent pine &amp; mossy forest estates</td>
<td>Prioritize the conduct of boundary delineation for Pine and Mossy Forest</td>
<td>DENR, NCIP, NAMRIA other stakeholders</td>
<td>1-5 yrs</td>
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### B. Tenure & Resource Use Rights:

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<tr>
<td>Conflicting Resources Use</td>
<td>Reconciliation of Indigenous Property Rights/Use with existing Forest Policies</td>
<td>DENR, LGU, other stakeholders</td>
<td>1-5 yrs</td>
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<td></td>
<td>Develop a co-mgt scheme of forest resources among agencies and stakeholders</td>
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<td>Establishment of models of TPSAs</td>
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### C. Technology and Information:

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<tr>
<td>Lack of Resource DENR, NCIP, NAMRIA other stakeholders</td>
<td>Develop Pine and Mossy Forest Resources Mgmt. Information System (PMF MIS)</td>
<td>ERDB/S;</td>
<td>1-5</td>
</tr>
<tr>
<td>Mgmt. Information System for Pine &amp; Mossy Forest</td>
<td>Harmonization of R&amp;D Results</td>
<td>ERDB/S;</td>
<td>1-5</td>
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### Issues vs. Recommendations

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</thead>
<tbody>
<tr>
<td>Lack of Concern on Genetic Resources</td>
<td>Establishment &amp; Mgmt. of Genetic Resources Areas (GRAs)</td>
<td>DENR, Academe, Research Institution</td>
<td>6-10 yrs</td>
</tr>
<tr>
<td>Mgmt. of Pine Forest.</td>
<td>Develop a Co-mgmt. Scheme of Forest Resources among Agencies and Stakeholders</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Inadequate R &amp; D on Market-Based Instruments for Pine Forest</td>
<td>Formulate and Implement MBs for Pine Forest Utilization</td>
<td>ERDB, DTI, DOST, Academe</td>
<td>1-5 yrs</td>
</tr>
</tbody>
</table>

### D. Institutional and HRD

<table>
<thead>
<tr>
<th>Issues</th>
<th>Recommendations</th>
<th>Responsible Agencies</th>
<th>Time Frame</th>
</tr>
</thead>
<tbody>
<tr>
<td>Non-Implementation of the Policy on Devolution Indiscriminate</td>
<td>Policy review on roles of DENR &amp; LGUs on Devolution of Functions Re: JMC for DILG-DENR</td>
<td>DENR, LGUs</td>
<td>1-5 yrs</td>
</tr>
<tr>
<td>Issuance of Tax Declarations by the LGUs</td>
<td>Review of Existing policies on issuance of tax declaration (LGC, PD 705)</td>
<td>LGUs, DENR</td>
<td>1-5 yrs</td>
</tr>
</tbody>
</table>

### E. Monitoring and Evaluation.

<table>
<thead>
<tr>
<th>Issues</th>
<th>Recommendations</th>
<th>Responsible Agencies</th>
<th>Time Frame</th>
</tr>
</thead>
<tbody>
<tr>
<td>No C &amp; I for Sustainable Pine &amp; Mossy Forest Mgmt.</td>
<td>Develop C &amp; I for the Sustainable Mgmt. of Pine &amp; Mossy Forest</td>
<td>DENR-ERDS w/ other stakeholders</td>
<td>1-5 yrs</td>
</tr>
</tbody>
</table>

### F. Information, Education and Communication (IEC).

<table>
<thead>
<tr>
<th>Issues</th>
<th>Recommendations</th>
<th>Responsible Agencies</th>
<th>Time Frame</th>
</tr>
</thead>
<tbody>
<tr>
<td>Inadequate Consultations among Stakeholders affected by the project</td>
<td>Strengthening of collaborations among stakeholders</td>
<td>DENR and other stakeholders</td>
<td>1-5 yrs.</td>
</tr>
</tbody>
</table>

### G. Other Issues

<table>
<thead>
<tr>
<th>Issues</th>
<th>Recommendations</th>
<th>Responsible Agencies</th>
<th>Time Frame</th>
</tr>
</thead>
<tbody>
<tr>
<td>Turf</td>
<td>Re-alignment of Program thrusts of inst. And agencies concerned into a common goal/vision</td>
<td>DENR and other stakeholders</td>
<td>1-5 yrs</td>
</tr>
<tr>
<td>Re-troffiting</td>
<td>Re-absorption of devolved DENR personnel</td>
<td>LGU, DENR</td>
<td>1-5 yrs</td>
</tr>
<tr>
<td>Issues</td>
<td>Recommendations</td>
<td>Responsible Agencies</td>
<td>Time Frame</td>
</tr>
<tr>
<td>-----------------------------------------------------------------------</td>
<td>-----------------------------------------------------------</td>
<td>----------------------------------------</td>
<td>------------</td>
</tr>
<tr>
<td>Optional appointment of ENRO</td>
<td>Lobby for mandatory creation of ENR office in every LGU</td>
<td>LGU, Congress DBM</td>
<td>1-5 yrs.</td>
</tr>
<tr>
<td>Lethargic participation of LGUs &amp; comm. in the mgt. of natural resources</td>
<td>Develop institutional mechanisms between and among concerned agencies</td>
<td>LGU, OGA, NGO, other stakeholders</td>
<td>1-5 yrs.</td>
</tr>
<tr>
<td>Inadequate and conflicting information</td>
<td>Develop cost efficient MIS</td>
<td>DENR</td>
<td>1-5 yrs.</td>
</tr>
</tbody>
</table>

**Group 4: Grazing/Pastureland Management**

**Vision:** Grazing lands as sustainable source of health and wealth for the empowerment of Filipinos, through Community Based Forest Management (CBFM), corporate and other appropriate tenurial systems.

**OBJECTIVES**
1. To improve the carrying capacity and productivity of grazing lands through improved forage and pasture grasses.
2. To improve livestock production through proper management practices and breeding technology.
3. To provide security of tenure and incentives to lessees/permittees to improve their range management operation.
4. To rationalize land allocation for permanent grazing lands in social, cultural, economic and political development.
5. To strengthen GL-MIS, IEC, R&D, networking, linkaging and other institutional support system.

<table>
<thead>
<tr>
<th>Issues</th>
<th>Recommendations</th>
<th>Responsible Agencies</th>
<th>Time Frame</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>A. Land use issues.</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>No policy on allocating certain grassland as permanent grazing lands</td>
<td>Incorporate in the legislative agenda:</td>
<td>DENR, Congress, NEDA</td>
<td>2003</td>
</tr>
<tr>
<td>Slow progress in land suitability/avail assessment for livestock grazing.</td>
<td>* SFMA</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>* Land Use Act</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>To draft proclamation declaring certain grasslands as permanent grazing lands</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>B. Policy issues</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Security of tenure- leaseholder’s risks of non-renewal/cancellation/suspension of lease agreement due to certain provision (“natural interest”)</td>
<td>Review/update DAO 99-36 (including IRR per MC 99-26) to incorporate sentiments of landholders, IPs, &amp; other stakeholders</td>
<td>FMB PTWG/DENR</td>
<td>2003</td>
</tr>
<tr>
<td>-Magat/ Nueva Viscaya experiences</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>User’s Fee- very nominal fee for a long time did not force the leaseholders to be intensive or efficient in their operation.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Expensive assessment/survey fee (sentiment of ranchers)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Expensive rate per DAO-99-36</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Issues</td>
<td>Recommendations</td>
<td>Responsible Agencies</td>
<td>Time Frame</td>
</tr>
<tr>
<td>--------------------------------------------</td>
<td>---------------------------------------------------------------------------------</td>
<td>----------------------</td>
<td>------------</td>
</tr>
<tr>
<td>C. Monitoring and Evaluation/Technical Issues</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lack of Criteria and Indicators and standards for sustainable range management</td>
<td>Develop of C &amp; I for sustainable range mgmt-2003-04</td>
<td></td>
<td>1 year</td>
</tr>
<tr>
<td>Lack of R &amp; D</td>
<td>Conduct policy &amp; operational research on:</td>
<td></td>
<td>2 years</td>
</tr>
<tr>
<td></td>
<td>-Improving the carrying capacity of pasture &amp; grazing lands</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>-Determine financial &amp; incentive systems for community-based range mgmt.</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>-Rehabilitation measures for degraded grazing lands</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>-Review &amp; update of users fee (annual rental fee)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Pilot of co-mgmt approach (PO/LGU-DENR)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lack of Data base</td>
<td>Develop &amp; operationalize range management information system (RMIS)</td>
<td></td>
<td>1 year</td>
</tr>
<tr>
<td>Lack of IEC Mgmt.</td>
<td>Harmonize IEC act. &amp; dev. national IEC plan for range mgmt</td>
<td></td>
<td>1 year</td>
</tr>
<tr>
<td>D. Institutional/Operational/Financial/Resource Assistance</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Weak Org. Structure (range improvement function not included in present structure)</td>
<td>institute the “re-engineering”of FMB/FMS organization as resource &amp; land managers to strengthen, retool &amp; retrofit the range mgmt functions of the forestry sector</td>
<td>DENR</td>
<td>1 year</td>
</tr>
<tr>
<td></td>
<td>strengthen local &amp; international collaboration for resource support</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

3.0 Workshop Results (Workshop 6, Balanghai Hotel, Butuan City, August 18, 2003)

**Group 1. Forest Plantations**

**Vision:** Forest Plantations having adequate supply of quality raw materials for wood-based industries that is globally competitive, ecologically and economically sustainable for poverty alleviation and in harmony with nature.

**Objectives:**
1. Establish, develop and protect wide-scale forest plantations.
2. Provide sufficient supply of timber to meet the demands of local and foreign wood-based industries.
3. To generate employment and livelihood opportunities for rural and urban areas towards the improvement of the quality of life.
4. To institutionalize linkages among tree farmers, wood industry and investors.
<table>
<thead>
<tr>
<th>Issues</th>
<th>Recommendations</th>
<th>Responsible Agencies</th>
<th>Time Frame</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Interventions of the local government units in imposition of taxes and documentation of forest products.</td>
<td>Dialogue among LGUs, Tree Farmers, DENR</td>
<td>DENR</td>
<td>1 year</td>
</tr>
<tr>
<td>2. Lack of market linkages for some timber and forest products, unfavorable mode of payment and scaling.</td>
<td>Promotion of market linkages</td>
<td>DENR, PWPA, DTI</td>
<td>6 months to 1 year</td>
</tr>
<tr>
<td>3. Lack of database on production technology and market price.</td>
<td>IEC</td>
<td>DENR, Federation and stakeholders</td>
<td>6 months to 1 year</td>
</tr>
<tr>
<td>4. Lack of financial support from private and government financial institutions.</td>
<td>Open windows for soft loans to tree farming from LB and DBP.</td>
<td>DENR, Banks, CFTFDI</td>
<td></td>
</tr>
<tr>
<td>5. Poor conditions of farm to market roads.</td>
<td>Open website</td>
<td>CFTFDI, DENR Regional offices</td>
<td>1 to 5 years</td>
</tr>
<tr>
<td>6. Price manipulation by middlemen</td>
<td>Periodic or regular dialogue with wood producers/traders</td>
<td>DENR, PWPA</td>
<td>6 months to 1 year</td>
</tr>
<tr>
<td>7. No market outlets for some tree plantation species</td>
<td>Follow-up with other institution/agency</td>
<td>LGU, DPWH, CFTFTI, DPWH, LGU, DENR</td>
<td></td>
</tr>
<tr>
<td>8. Red tape in processing of transport documents</td>
<td>&quot;One stop shop&quot;, sanctions</td>
<td>CFTFTI, DPWH, LGU, DENR</td>
<td>ASAP</td>
</tr>
<tr>
<td>9. Most small tree farmers not using appropriate tree farming technologies</td>
<td></td>
<td>CFTFTI, DPWH, LGU, DENR</td>
<td></td>
</tr>
<tr>
<td>10. Lack of understanding on the ecological implication of the establishment of palm oil plantation instead of tree plantation.</td>
<td>&quot;One stop shop&quot;, sanctions</td>
<td>IEC</td>
<td>1 year</td>
</tr>
</tbody>
</table>

Group 2. Investments in Forestry

Vision: Integrated Forest-Based Industry with a sustainable source of raw materials producing world-class products with fully secured investments and promoting the welfare of the workers and local communities.

Objectives:

General: To improve investments in environment for the forest based industry.

Specific:
1) To provide a strong and consistent policy to ensure security of planters and investors.
2) To improve investment in environment for the forest based industry.
3) To develop mechanisms to improve marketing of products.
4) To fully support the technical services needed in forest investment and technical know how with regards to exportation and as to world class quality.
5) Ensure and generate income for the environmental enhancement of upland farmers.
6) To develop and provide incentive mechanisms to the industry.
7) To institutionalize support mechanisms particularly in small and medium enterprise

<table>
<thead>
<tr>
<th>Issues</th>
<th>Recommendations</th>
<th>Responsible Agencies</th>
<th>Time Frame</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Provide market linkages</td>
<td>1. Provide market linkages</td>
<td>DTI, BOI, DENR, LGU, Private Sector</td>
<td>1 year</td>
</tr>
<tr>
<td>2. Peace and order condition.</td>
<td>1. Strengthen community relation Provide alternative livelihood</td>
<td>LGU, PNP, CDA, NCIP, TESDA</td>
<td>Continuing</td>
</tr>
<tr>
<td>3. Vocational Trainings</td>
<td>1. Coordination thru LGU; of government agencies regarding skills (DTI, DENR, DEPED)</td>
<td>TESDA, LGU, DTI, DENR, DEPED</td>
<td>5 years</td>
</tr>
<tr>
<td>4. Inadequate financing support.</td>
<td>1. Pooling of resources 2. Cooperative system 3. Lobby for lower equity participation 4. Development of consumer-producers data bank 5. Encourage banks to set up special window for forest products</td>
<td>CDA, DOF, CB, DENR, BOI, LGU Private Sector, GFI's</td>
<td>1-5 years</td>
</tr>
<tr>
<td>5. Unstable market, policy and raw materials price</td>
<td>1. Ensure raw materials and policy 2. Minimization of DENR policy revisions. 3. Posting of flow chart of procedures for permits, clearances, etc. 4. Standardize and harmonize procedures</td>
<td>DENR, DTI-BOI, LGUs, Private sector</td>
<td>1-3 years</td>
</tr>
<tr>
<td>6. Very expensive capitalization</td>
<td>1. To stabilize market</td>
<td>DTI</td>
<td>1-3 years</td>
</tr>
</tbody>
</table>

Workshop Results (Workshop 7, Green Heights Convention Center, Davao City, August 19, 2003)

Group 1: Community Based-Forest Management

Vision: Improved quality of life of upland communities actively participating in sustainable forest management thru CBFM

Objectives:

General Objective:
To sustainably manage forest resources towards the upliftment of socio-economic condition of forest based communities

Specific:
1. To enhance CBFM thru sustainable and globally competitive programs that will improve the quality of life of the forest-based communities.
2. To rehabilitate, protect, manage, conserve and develop denuded forestlands.
<table>
<thead>
<tr>
<th>Issues</th>
<th>Recommendations</th>
<th>Responsible Agencies</th>
<th>Time Frame</th>
</tr>
</thead>
</table>
| 1. Tenure of AWP and RUPs                                            | - Simplification of RUP and AWP requirement for renewal.  
- Extend the tenure of AWP and RUP for reasonable period of time to attain its development plan.                                                                                                           | DENR                                    | 1 year     |
| 2. Deforestation                                                    | - Ensure replenishment program after harvesting of trees.                                                                                                                                                           | DENR, POs, LGUs, NCIP                  | 5 years    |
| 3. Weak linkages among developmental agencies                        | - Involvement of LGU in forest management and protection.                                                                                                                                                         | DENR, POs, LGUs, NCIP, OGA             | Immediately|
| 4. Issuance of CLOA by DAR to the CBFM target areas                  | - Inventory of CLOAs (should undergo due process) issued in timberland for subsequent cancellation and place under CBFM                                                                                                                                                   | DENR, DAR, LGU                         | 2 years    |
| 5. Revenue                                                          | - LGU sharing                                                                                                                                                                                                   | DENR, LGU, POs                          | Continuing |
| 6. Some implementers are not serious to their task                   | - Let it be implemented seriously by strengthening CBFM structure.  
- Providing permanent CBFM position in the field  
- Institutionalize CBFM                                                                                                                                                                                       | DENR, LGUs                              | 1 year     |
| 7. Financial Constraints in the implementation of CBFM programs.     | - Additional budget for CBFM  
- Financial assistance for CBFM holder for livelihood and development, project.                                                                                                                                                                                    | DENR, LGU, Private sector, financial inst.| 1 year     |
| 8. Limited technology                                               | - Conduct research based on technical gaps.  
- Promotes sustainable agro-forest farming  
- Conduct IEC and community organizing                                                                                                                                                                           | DENR, DA, TESDA, SCU, DOST, LGU PO, NGO | 1-5 years  |
| 9. Conflicting and unclear policies.                                | - DENR policy body should see to it that DAO/MCs must be formulated pursuant to Law.  
- Sustainable Forest Management Act must be passed and approved.                                                                                                                                                                                                     | DENR                                    | 3 years    |
| 10. Poor marketing support                                          | - Promote market linkages among the industry stakeholders.  
- Join federation for marketing support                                                                                                                                                                                                                                 | DENR, DTI, LGU                          | 1 year     |
| 11. Weak forest management program in CBFM areas/ communities.       | - Participation of IPs and non-IPs in community decision-making and project implementation in CBFM.                                                                                                                                                                      | DENR, POs, LGUs, NCIP, NGO             | 1 year     |
| 12. Absence of law regarding CBFM-SA that prohibits the use of said funds.| - Policy formulation that will address this issue.                                                                                                                                                                                                                            | DENR                                    | 1-2 years  |
Group 2. Criteria and Indicator and Forest Certification

**Vision:** Effective Implementation of Criteria and Indicator for SFM

**Objectives:**

1) Formulation of C&I for Plantation Forestry, Pine and Mangrove Forests.
2) CBFM
3) To train FMUs in C&I
4) To fully implement C&I at different FMUs towards certification

<table>
<thead>
<tr>
<th>Issues</th>
<th>Recommendations</th>
<th>Responsible Agencies</th>
<th>Time Frame</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acceptance of Certification Process</td>
<td>Orientation, Awareness, Training on C&amp;I Program</td>
<td>DENR, PIA, Academe, LGUs</td>
<td>1-3 years</td>
</tr>
</tbody>
</table>
| Highly Technical, centralized, tedious and expensive process | • Simplify the Process
• Creation of One stop Shop Center
• Provide explanatory notes to highly technical terms
• Decentralize the process | DENR, Academe                            | 1-3 years  |
| Database                                            | Generate database                       | DENR, NAMRIA, LGUs, Academe, Research Institution | 1-3 years  |
| Conformity of C&I to WEM Approach                   | Include parameter in Conformity with WEM Approach | DENR, Academe                          | 1 year     |
| No Forest Certification Body in the Country         | Formally organize a local body(TWG) that will formulate and develop certification criteria | DENR, Concerned Stakeholders, Multi-Sectoral | 1-3 years  |
| NO Specific C&I for CBFM and their forest types     | Come-up with specific C&I for different types | DENR, Academe, Research Institution   | 1-5 years  |
ANNEX 2

ITP DEVELOPMENT:
CHILE AND PHILIPPINE MODELS
### ITP DEVELOPMENT: CHILE AND PHILIPPINE MODELS

<table>
<thead>
<tr>
<th>Parameters</th>
<th>Chile</th>
<th>Philippines</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Time</strong></td>
<td>1974</td>
<td>1975</td>
</tr>
<tr>
<td><strong>Enabling Law</strong></td>
<td>Decree Law 701</td>
<td>P.D. No. 705</td>
</tr>
<tr>
<td></td>
<td>To be in effect 1974-94</td>
<td>To be in effect immediately</td>
</tr>
<tr>
<td></td>
<td>US$55.8 million annually</td>
<td>US$363.6 million annual average</td>
</tr>
<tr>
<td><strong>Export prior to Law</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(1970-1974)</td>
<td></td>
</tr>
<tr>
<td>- Logs</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>- Lumber - 0.0 cu m</td>
<td>6.8 million cu m</td>
</tr>
<tr>
<td></td>
<td>- Wood pulp - 0.12 million tons</td>
<td>0.25 million cu m</td>
</tr>
<tr>
<td></td>
<td>- Wood panels - 0.12 million tons</td>
<td>0.0 million cu m</td>
</tr>
<tr>
<td><strong>Export in 1987 alone</strong></td>
<td>US$577.3 million</td>
<td>US$8.5</td>
</tr>
<tr>
<td></td>
<td>- Logs - solely plantation products</td>
<td>solely plantation products</td>
</tr>
<tr>
<td></td>
<td>- Lumber - 1.16 million cu m</td>
<td>0.20 million cu m</td>
</tr>
<tr>
<td></td>
<td>- Wood pulp - 866.40 million tons</td>
<td>None</td>
</tr>
<tr>
<td></td>
<td>- Wood panels - nil</td>
<td>None</td>
</tr>
<tr>
<td><strong>Incentives</strong></td>
<td>0.57 million tons</td>
<td>25 years + 25 years public forest</td>
</tr>
<tr>
<td>- Tenure</td>
<td>0.04 million tons</td>
<td>None</td>
</tr>
<tr>
<td>- <strong>Subsidy</strong></td>
<td>Stable, no expropriation of land</td>
<td></td>
</tr>
<tr>
<td></td>
<td>One-time 75% by government on Tree planting for 20 years</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Annually 75% by government for Maintenance of fire roads and fences</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Subsidy for two prunings</td>
<td></td>
</tr>
<tr>
<td></td>
<td>In 1984-85 subsidy increased to 90% to stimulate employment</td>
<td></td>
</tr>
<tr>
<td><strong>Activity category</strong></td>
<td>Prior to harvest – agriculture</td>
<td></td>
</tr>
<tr>
<td></td>
<td>During harvest-wood processing</td>
<td></td>
</tr>
<tr>
<td><strong>Central Bank</strong></td>
<td>Provided rediscout lines to state banks, development banks and commercial banks lending loans directly to ITP development</td>
<td>None</td>
</tr>
<tr>
<td><strong>Tenure of Loans</strong></td>
<td>3 to 6 years; 1 to 3 years grace</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Negotiable</td>
<td></td>
</tr>
<tr>
<td><strong>Interest rates</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Tax credit</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Value added tax credit on equipment for producing export</td>
<td>BOI incentives</td>
</tr>
<tr>
<td></td>
<td>Direct grant of 10% of export revenues for products &lt;US$2.5 million</td>
<td></td>
</tr>
<tr>
<td><strong>Forest lands</strong></td>
<td>30% of country</td>
<td>50% of country</td>
</tr>
<tr>
<td>- Commercial forest</td>
<td>8.8 million hectares</td>
<td>2.5 million hectares</td>
</tr>
<tr>
<td></td>
<td>7.5 million hectares</td>
<td>All</td>
</tr>
<tr>
<td>- Native parks/resources</td>
<td>1.3 million hectares</td>
<td>Unknown</td>
</tr>
<tr>
<td></td>
<td>13.0 million hectares</td>
<td>4.9 million hectares</td>
</tr>
<tr>
<td>PARAMETERS</td>
<td>CHILE</td>
<td>PHILIPPINES</td>
</tr>
<tr>
<td>------------------------------------------------</td>
<td>--------------------------------------------</td>
<td>--------------------------------------------</td>
</tr>
<tr>
<td>Rate of planting</td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Before the Law</td>
<td>6,000-13,000 hectares</td>
<td>8,000 hectares</td>
</tr>
<tr>
<td>- After the Law</td>
<td>50,000 hectares</td>
<td>52,000 hectares</td>
</tr>
<tr>
<td>- Species</td>
<td>Radiata pine (87%)</td>
<td>Mixed species</td>
</tr>
<tr>
<td>Total plantings</td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Before the Law</td>
<td>140,000 hectares</td>
<td>Unknown</td>
</tr>
<tr>
<td>- After the Law (up to 1986)</td>
<td>1,242,300 hectares</td>
<td>563,000 hectares but plantings unknown</td>
</tr>
<tr>
<td>Allowable cut from plantation</td>
<td>20-21 million cu m by 2000</td>
<td>Unknown</td>
</tr>
<tr>
<td>Internal demand (1986)</td>
<td>4 million cu m/year</td>
<td>2.5 million cu m/year</td>
</tr>
<tr>
<td>Ownership</td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Large firm</td>
<td>45%</td>
<td>Net importer</td>
</tr>
<tr>
<td>- Medium</td>
<td>25%</td>
<td></td>
</tr>
<tr>
<td>- Small operations</td>
<td>30% (5,000 owners of 50-150 hectares)</td>
<td>All subsidized at 65% of cost</td>
</tr>
<tr>
<td>Internal demand (1986)</td>
<td>Net importer</td>
<td></td>
</tr>
</tbody>
</table>

Source: (Angeles, 2003).
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Table 6.59. Basic assumptions for the total indicative cost of priority programs.

<table>
<thead>
<tr>
<th>Programs</th>
<th>Basic Assumptions</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Policy Reforms and Institutions Development</td>
<td></td>
</tr>
<tr>
<td>- Harmonization of forest and other policies</td>
<td></td>
</tr>
<tr>
<td>- In-depth review of policies, consultations</td>
<td>15 mil P/yr for 1st 3 years,</td>
</tr>
<tr>
<td>- Harmonization, policy reforms, codification</td>
<td>3 mil P/yr from 3-5 years</td>
</tr>
<tr>
<td>- Dissemination, continuing review, updates</td>
<td>2 mil P/yr beginning 3rd year and continuing</td>
</tr>
<tr>
<td>- Reversion/retrofitting the PFA as a line agency</td>
<td>carried under harmonization/policy reform</td>
</tr>
<tr>
<td>- Capacitation of forestry institutions</td>
<td>carried out in IEC, MIS, M &amp; E</td>
</tr>
<tr>
<td>- National Council for Sustainable Forestry (NCSF)</td>
<td></td>
</tr>
<tr>
<td>2. Prioritization/watershed integrated land use planning</td>
<td></td>
</tr>
<tr>
<td>- Prioritization</td>
<td>20 mil P/yr for 1st 2 years</td>
</tr>
<tr>
<td>- Watershed Landuse Planning</td>
<td>based on P167/ha, 12.4 mil ha 75:25 for the first 2-5-year period, resp.</td>
</tr>
<tr>
<td>- Forest Boundary Delineation/Mapping</td>
<td>P243/ha for 12.4 mil ha, 75:25 for the first 2 5-year period, respectively</td>
</tr>
<tr>
<td>3. MIS, IEC and R &amp; D enhancement</td>
<td></td>
</tr>
<tr>
<td>MIS</td>
<td></td>
</tr>
<tr>
<td>Upgrading of Central PFA MIS</td>
<td>3 mil P 1st yr, 1 mil p/yr for succeeding years</td>
</tr>
<tr>
<td>- website installation, updating</td>
<td>.5 mil P/yr</td>
</tr>
<tr>
<td>Upgrading of regional MIS facilities</td>
<td>2 mil P per region for 1st year, .5 mil P/yr for maintenance</td>
</tr>
<tr>
<td>Regional Information gathering systems development</td>
<td>1 mil P/yr/region</td>
</tr>
<tr>
<td>IEC, Training</td>
<td></td>
</tr>
<tr>
<td>Forestry and Environmental Education</td>
<td>70, 80, &amp; 90 mil P/5 yrs for the next 15 years</td>
</tr>
<tr>
<td>Forestry Training</td>
<td>120 mil P/5 yrs for next 15 years</td>
</tr>
<tr>
<td>IEC</td>
<td>60, 70, &amp; 80 mil P/5 yrs for the next 15 years</td>
</tr>
<tr>
<td>R &amp; D</td>
<td>50 mil P/yr on top of what is current, in support of sustainable forestry</td>
</tr>
<tr>
<td>4. Sustainable management of residual/other forests</td>
<td></td>
</tr>
<tr>
<td>Delineation/demarcation of protn' &amp; prod'n forests</td>
<td>Carried under Watershed Programs</td>
</tr>
<tr>
<td>Development of JV, CP &amp; PS models/mechanisms</td>
<td>10 mil P first 5 years, 5 mil P next 5 years</td>
</tr>
<tr>
<td>Implementation of JV, CP &amp; PS</td>
<td>Budget depends on area and development component for each site.</td>
</tr>
<tr>
<td>5. Forest area expansion</td>
<td></td>
</tr>
<tr>
<td>- Commercial Plantation</td>
<td>P29,000 per ha for 40,000 ha/year</td>
</tr>
<tr>
<td>- Forest Rehabilitation</td>
<td>Ave. of P20,000/ha for 10,000 ha per year</td>
</tr>
<tr>
<td>6. Protected area and biodiversity conservation programs</td>
<td></td>
</tr>
<tr>
<td>to be determined during the action planning</td>
<td></td>
</tr>
<tr>
<td>7. Forest industries development</td>
<td></td>
</tr>
<tr>
<td>- Rationalization</td>
<td>5 mil P for policy study, 200 mil P assistance to industry for 5 years</td>
</tr>
<tr>
<td>- Provision of new technologies in forest utilization</td>
<td>carried out under research</td>
</tr>
<tr>
<td>- Improvement of infrastructures</td>
<td>carried under rationalization</td>
</tr>
<tr>
<td>- Establishment of community-based Industries</td>
<td>carried under CBFM programs</td>
</tr>
<tr>
<td>- Establishment of a Forest Industries Board</td>
<td>carried under rationalization</td>
</tr>
<tr>
<td>8. Sustainable management of grazing lands</td>
<td></td>
</tr>
<tr>
<td>Identification, demarcation, planning</td>
<td>Carried under Watershed Programs</td>
</tr>
<tr>
<td>Sustainable Management</td>
<td>P40/ha/yr * 300,000</td>
</tr>
<tr>
<td>9. Full development and implementation of M &amp; E, C &amp; I</td>
<td></td>
</tr>
<tr>
<td>M &amp; E, satellite photos</td>
<td>5.5 mil P every 5 years, photos and interpretation</td>
</tr>
<tr>
<td>-------------------------</td>
<td>---------------------------------------------</td>
</tr>
<tr>
<td>M &amp; E systems upgrading/development</td>
<td>2 mil P/yr central PFA, 1 mil P/yr for each region</td>
</tr>
<tr>
<td>C &amp; I development for all types of forests/mgt systems</td>
<td>3 mil P/yr for the next 10 yrs</td>
</tr>
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</table>

<table>
<thead>
<tr>
<th>10. CBFM - cross cutting strategy</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>- Enhancement of CBFM implementation in existing sites</td>
<td>P100,000 enhancement budget/site for priority 1,000 sites, 1st 3 years</td>
</tr>
<tr>
<td>- Identification and appraisal of new sites</td>
<td>0.2 mil P/site for additional 1,500 sites, for next 5 years</td>
</tr>
<tr>
<td>- Establishment and CO of new sites</td>
<td>P2,000 CO cost/ha for 3.3 Mil ha of new sites</td>
</tr>
<tr>
<td>- Site Development (Agroforestry, other forest plans)</td>
<td>Ave. of P20,000/ha CSD cost for around .5 mil ha , 60:40 ratio for 10 yrs</td>
</tr>
<tr>
<td>- Livelihood /Enterprise development</td>
<td>P150,000 per site for 500 priority sites, 50 sites/year</td>
</tr>
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</table>
### Table 2.36. Apparent domestic consumption of logs and major wood products (million cum).

<table>
<thead>
<tr>
<th></th>
<th></th>
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</tr>
</thead>
<tbody>
<tr>
<td>Logs</td>
<td>Production</td>
<td>2.503</td>
<td>0.758</td>
<td>0.771</td>
<td>0.556</td>
<td>0.634</td>
<td>0.73</td>
<td>0.8</td>
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<tr>
<td></td>
<td>Export</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>0.004</td>
<td>-</td>
<td>(a)</td>
<td>(a)</td>
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<tr>
<td></td>
<td>Import</td>
<td>0.381</td>
<td>0.694</td>
<td>0.878</td>
<td>0.768</td>
<td>0.435</td>
<td>0.583</td>
<td>0.585</td>
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<tr>
<td></td>
<td>ADC</td>
<td>2.884</td>
<td>1.452</td>
<td>1.649</td>
<td>1.32</td>
<td>1.069</td>
<td>1.313</td>
<td>1.385</td>
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<tr>
<td>Lumber</td>
<td>Production</td>
<td>0.841</td>
<td>0.286</td>
<td>0.313</td>
<td>0.351</td>
<td>0.222</td>
<td>0.288</td>
<td>0.15</td>
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<td></td>
<td>Export</td>
<td>0.077</td>
<td>0.084</td>
<td>0.145</td>
<td>0.141</td>
<td>0.041</td>
<td>0.069</td>
<td>0.12</td>
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<td>Import</td>
<td>0.004</td>
<td>0.378</td>
<td>0.567</td>
<td>0.412</td>
<td>0.296</td>
<td>0.381</td>
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<td>ADC</td>
<td>0.868</td>
<td>0.58</td>
<td>0.735</td>
<td>0.622</td>
<td>0.477</td>
<td>0.6</td>
<td>0.389</td>
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<td></td>
<td>PDD</td>
<td>0.884</td>
<td>1.029</td>
<td></td>
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<td></td>
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</tr>
<tr>
<td>Veneer</td>
<td>Production</td>
<td>0.049</td>
<td>0.019</td>
<td>0.082</td>
<td>0.062</td>
<td>0.059</td>
<td>0.089</td>
<td>0.178</td>
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<td>Export</td>
<td>0.047</td>
<td>0.032</td>
<td>0.026</td>
<td>0.031</td>
<td>0.032</td>
<td>0.005</td>
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<tr>
<td></td>
<td>Import</td>
<td>(a)</td>
<td>0.025</td>
<td>0.094</td>
<td>0.086</td>
<td>0.063</td>
<td>0.138</td>
<td>0.119</td>
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<td></td>
<td>ADC</td>
<td>0.002</td>
<td>0.012</td>
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<td>0.117</td>
<td>0.08</td>
<td>0.222</td>
<td>0.294</td>
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<tr>
<td>Plywood</td>
<td>Production</td>
<td>0.397</td>
<td>0.29</td>
<td>0.508</td>
<td>0.484</td>
<td>0.246</td>
<td>0.243</td>
<td>0.286</td>
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<td></td>
<td>Export</td>
<td>0.176</td>
<td>(a)</td>
<td>(a)</td>
<td>(a)</td>
<td>(a)</td>
<td>(a)</td>
<td>(a)</td>
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<tr>
<td></td>
<td>Import</td>
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<td>0.002</td>
<td>0.001</td>
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<td>ADC</td>
<td>0.224</td>
<td>0.292</td>
<td>0.509</td>
<td>0.485</td>
<td>0.248</td>
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<td>0.363</td>
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</table>

PDD = Projected domestic demand
ADC = Apparent domestic demand
Source: Philippine Forestry Statistics, 2001