

REPUBLIC OF GHANA

MINISTRY OF LANDS AND FORESTRY

FORESTRY DEVELOPMENT MASTER PLAN

1996 - 2020

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MAP OF ADMINISTRATIVE REGIONS OF GHANA

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EXECUTIVE SUMMARY

The forestry sector in Ghana has been subjected to various impacts and pressures which have threatened the sustainability of timber resources and certain wildlife species and the sector's ability to contribute to the country's socio-economic development and maintenance of the environment. In 1994 a new Forest and Wildlife Policy was adopted with the aims of "conservation and sustainable development of forest and wildlife resources for maintenance of environmental quality and the perpetual flow of optimum benefits to all segments of society". The present condition of the forest resource base is such that the annual sustainable harvest has had to be restricted to a maximum of 1 million m³ for the foreseeable future. However, the annual cut has to satisfy a timber industry that is characterized by excessive installed capacity and low recovery rates, mainly focussed on exporting to a hardening market place, and domestic consumption, mainly fed from illegal sources. At the same time, environmental concerns have increased to the extent where wildlife and biodiversity conservation are demanding equal attention with forest protection and rehabilitation of degraded and understocked areas occupying a third of the forest estate. The Forestry Development Master Plan has therefore been prepared as a sound basis for attainment of the aims of the Forest and Wildlife Policy, and its successful implementation is intended to maximize the rate of social and economic development of the country and secure optimum welfare and adequate means of livelihood for all Ghanaians.

The Master Plan has taken note of the progress made in these efforts and the current trends in the sector as shaped by studies conducted during the past decade, particularly the results of the on-going IDA/DANIDA/ODA Forest Resource Management Project and the recent ODA study on Policies for Sustainable Forest Management in Ghana. It reviews the current situation of the sector and discusses the main factors concerned with sustainability of forest resources, consumption of wood energy and non-timber products, the viability of the timber industry and prospects for wood processing, the conservation of wildlife and biodiversity and the whole question of involvement of people in dealing with these issues. The Plan recognizes that success in management and sustainable development of renewable resources is dependent on effective institutions as well as an enabling environment in which all players can operate optimally. It also recognizes the dynamic interaction of socio-economic activities and environmental effects, within and impinging on the sector. As an action plan, it then sketches a series of scenarios which would ultimately arrive at the projected aim of the Forest and Wildlife Policy and proposes a schedule of programmes, project profiles and activities by which the scenarios can be realized.

Within this framework, the goal of the Forestry Development Master Plan is identical with the aims of the Forest and Wildlife Policy from which it has also derived the following objectives:

- i management and enhancement of Ghana's permanent estate of forest and wildlife resources;
- ii promotion of viable and efficient forest-based industries, particularly in secondary and tertiary processing;
- iii promotion of public awareness and involvement of rural people in forestry and wildlife conservation;
- iv promotion of research-based and technology-led forestry and wildlife management, utilization and development;
- v development of effective capability at national, regional and district levels for effective forest and wildlife management.

The objectives are scheduled into three time horizons, namely, Phase I - 1996 to 2000, Phase II - 2001 to 2010, Phase III - 2011 to 2020. Phase I projects consolidation of forest management systems to ensure that timber can be certified as "sourced from sustainably managed forests" by the year 2000 and implementation of a Protected Areas System Plan; development and launching of flexible schemes for investments in commercial forest plantations, tree farming and propagation of non-timber products and wildlife; creation of an enabling climate for rationalization of the timber industry and consolidation of fiscal measures for efficient utilization and increased value-added processing. In Phase II, it is envisaged that maintenance of sustainable forest and protected areas management systems will continue with maintenance of commercial forest-based production systems and development of product harvesting, handling and marketing facilities, as well as promotion of total value-added processing and competitive marketing. Finally, Phase III would see continued maintenance of sustainable forest and wildlife management systems, commercial production systems, improved product harvesting and marketing and competitive value-added processing industries.

VEGETATION MAP OF GHANA

PART I. INTRODUCTION

1.1 Following the general consensus achieved in drafting the 1994 Forest and Wildlife Policy, the opportunity was taken to commence preparation of a comprehensive plan of action to guide implementation of policy objectives and key strategies up to the year 2020. Accordingly, three working committees, including representatives from private and public sectors, were formed in the Ministry of Lands and Forestry to prepare development proposals for forest resources, forest industries and wildlife management. Initial compilation of the work of the committees was deferred pending an appreciation of the scope of the national medium-term plan, Ghana - Vision 2020, and the planning guidelines prepared by the National Development Planning Commission. However, the dynamic nature of the forest and wildlife sector and its ramifications within the economy made it imperative that a framework plan be articulated for the immediate use of all interested parties within and outside the sector.

1.2 Prior to the Fourth Republic, the forestry sector lacked an updated and clearly defined forest policy spelling out goals, objectives and strategies for development of forest resources and the future direction of the timber industry. As a result, administration by the relevant sector institutions was weak and in the authority vacuum, widespread trade indiscipline, failure to pay royalties and other statutory fees, speculative felling, illegal trading in Property Marks and unauthorized subletting of concessions to illicit timber operators became rife. In force at the time were ridiculously low fines and outdated legal sanctions that served as stimuli, rather than as deterrents, to the rampant commission of forest offences. These deficiencies led to excessive depletion of the most marketable timber species causing severe forest degradation and an escalated rate of deforestation by agricultural encroachment. Also, the situation was further aggravated by a lack of local community involvement in forest resource protection and an absence of comprehensive and coordinated medium- to long-term plans.

1.3 It was realised that attention would have to be focused on the contributory factors which had affected the sector's poor performance. In particular, obsolete, inadequate enabling legislation would have to be reviewed along with inconsistent financing of public forest sector operations and ill-motivated civil service personnel. In addition, government would have to address the lack of cooperation from the law enforcement agencies and the bench and take positive measures to counteract the aggressive and militant stance of illegal loggers and chainsaw operators, as well as the logging and sawmilling subsectors dominated by illiterate and ill-informed operators, a misinformed print media, lack of unity within private sector trade associations and the problem of financial intermediation. Therefore, to address these issues and problems, the Ministry of Lands and Forestry directed its efforts towards the creation of long-term conditions under which the dwindling forest resources could be efficiently and equitably managed and utilized to satisfy, on a sustainable basis, the present and future needs of the people of Ghana. In summary, the Ministry's basic actions comprised policy reforms and legislative reviews, fiscal and control measures aimed at securing the resource base, incentives and training in the private sector for wood industry development, and community and international collaboration.

1.4 A great deal of progress has been made during the past three years and the immediate need is to consolidate these gains. The preparation of this Master Plan is therefore both timely and necessary. It is hoped that respective sector institutions will make full use of this document as a basic framework for preparing and implementing their own work plans towards achieving sustainable development of natural, economic and human resources for the mutual benefit of all.

PART II. SECTORAL PROFILE: THE CURRENT SITUATION

2.1 General Description and Current Policy

2.1.1 The forestry sector comprises government and private entities involved in administration, development and utilization of forest and wildlife resources and includes wood-using industries and related activities. The key government agencies are: the Ministry of Lands and Forestry - responsible for policy direction and monitoring of sectoral programmes towards attainment of the national goal; the Forestry Department - responsible for protection and management of the forest estate; the Wildlife Department - responsible for protection and management of wildlife and protected areas; the Forest Products Inspection Bureau - responsible for certification of product standards in the timber industry; the Timber Export Development Board - responsible for marketing intelligence and promotion of improved industrial processing; the Forestry Commission - responsible for advising the sector Minister on policies to regulate the management and utilization of forest and wildlife resources; the Forestry Research Institute of Ghana - responsible for undertaking research activities to solve resource and industrial problems. Basically, the private entities consist of: the land owners (stools, skins and communities) on whose behalf the government manages the forest and wildlife resources, in the national interest; the logging companies which operate timber concessions to supply sawmills, veneer mills and other processors with wood raw material; the wood processing companies which convert timber to secondary wood products, mainly for foreign markets; the chainsawyers who produce rough sawn products for the domestic market.

2.1.2 The performance of the sector had been declining since the 1970s, with resources suffering from socio-economic pressures and exploitation, controls weakened by inadequate administration, and industry operations affected by over-capacity, speculation and inefficiency. Efforts to improve the industry through the Economic Recovery Programme (1983) may have improved gross production but they have also exacerbated the demands on the forests. During the past decade, the Government of Ghana has been executing a national forestry programme with the support of international donors and has completed a forest sector review, carried out a national forest inventory and related sectoral studies, initiated policy and institutional reforms, provided improved infrastructure and training and developed a revised policy statement. Primary support has been provided since 1989 under the Forest Resource Management Project (FRMP) funded jointly by the International Development Agency of the World Bank (IDA), the Danish International Development Agency (DANIDA) and the Overseas Development Administration of the United Kingdom (ODA). The main focus of the FRMP (which terminates in 1997) has been the institutional strengthening of forest sector agencies, including infrastructure and training, and development of policy planning, monitoring and evaluation capability. At the same time, management planning of protected areas was introduced to systematize development and management of wildlife resources.

2.1.3 In 1993-94 while efforts were being made to strengthen regulatory agencies, both forest and wildlife resources were subjected to a dramatic rise in the rates of exploitation, mainly by logging and sawmilling interests, as well as by illegal chainsaw operators and hunters. In order to contain these threats to sustainability of the nation's resources, the government resorted to a series of ad hoc control measures which have achieved a fair degree of success in stabilising the sector. The measures included: regulations to control illegal chainsaw operators; control of speculative felling for log exports; and, a timber auction to clear the glut of piled-up logs. Subsequently, other initiatives were taken, including: a mobile forest protection action group; temporary suspension of log exports; and, felling controls for off-reserves harvesting.

2.1.4 The new Forest and Wildlife Policy, approved in November 1994, is a notable achievement for the sector, and for Ghana. It aims at "conservation and sustainable development

of the nation's forest and wildlife resources for maintenance of environmental quality and perpetual flow of optimum benefits to all segments of society" and has the following objectives:

- i management and enhancement of Ghana's permanent estate of forest and wildlife resources for preservation of vital soil and water resources, consevation of biological diversity and the environment and sustainable production of domestic and commercial produce;
- ii promotion of viable and efficient forest-based industries, particularly in secondary and tertiary processing, so as to fully utilize timber and other products from forests and wildlife resources and satisfy domestic and international demand for competively-priced products;
- iii promotion of public awareness and involvement of rural people in forestry and wildlife conservation so as to maintain life-sustaining systems, preserve scenic areas and enhance the potential of recreation, tourism and income-generating opportunities;
- iv promotion of research-based and technology-led forestry and wildlife management, utilization and development to ensure resource sustainability, socio-economic growth and environmental stability;
- v development of effective capacity and capability at national, regional and district levels for sustainable management of forest and wildlife resources.

2.1.5 Figure 1 provides a summary of the policy and its related strategies in relation to on-going projects. It also indicates the implications for the Master Plan by designating the responsible lead agency and projected timeframe for implementation of each strategy.

FIGURE 1 SUMMARY OF FOREST & WILDLIFE POLICY

AIM: "Conservation and sustainable development of the nation's forest and wildlife resources for maintenance of environmental quality and perpetual flow of optimum benefits to all segments of society".

OBJECTIVE	STRATEGIES	LEAD AGENCY	PHASING	RELATED PROJECTS
1. Manage and Enhance Permanent Forest and Wildlife Estate This major resource management objective will be executed by the Forest Service and the Wildlife	1.1 Develop integrated land use plan	MLF FS	1996 - 98	FRMP & FSDP
	1.2 Include unreserved forests under forest management system	FS, WD	1996 -	FRMP & FSDP
	1.3 Revise resource management standards	FS, WD	2000 1996	FRMP & FSDP
	1.4 Enforce specifications compliance among authorised users	FS, WD	- 98 1996	FSDP FRMP
	1.5 Audit utilization operations	MLF WD	- 2000	FRMP FRMP, EU &

<p>Involvement in Resource Conservation</p> <p>The success of the two major objectives will depend on increased awareness to foster widespread public and political support. Emphasis will be placed on rural people's participation in resource management and protection.</p>	<p>3.2 Promote agroforestry</p> <p>3.3 Disseminate research information and data on forestry and wildlife</p> <p>3.4 Participate in related expos & seminars</p> <p>3.5 Develop participatory management mechanisms</p> <p>3.6 Promote national tree planting programmes</p> <p>3.7 Initiate national dialogue on key issues and programmes</p> <p>3.8 Maintain liaison at local community administration levels</p>	<p>es</p> <p>AFU/ MOFA All agenci es</p> <p>All agenci es</p> <p>FS, WD FC</p> <p>FC FS, WD, AFU</p>	<p>2000</p> <p>1996</p> <p>-</p> <p>2020</p> <p>1996</p> <p>-</p> <p>2020</p> <p>1996</p> <p>-</p> <p>2020</p> <p>1996</p> <p>-</p> <p>2000</p> <p>1996</p> <p>-</p> <p>2000</p> <p>1996</p> <p>-</p> <p>2020</p>	<p>-</p> <p>-</p> <p>FSDP</p> <p>-</p> <p>-</p> <p>-</p>
<p>4. Promote Relevant Research for Improved Sustainable Management</p> <p>Increased knowledge and appropriate technology are essential to the major objectives. Emphasis will be placed on research activities of immediate benefit to users and clients.</p>	<p>4.1 Promote user-oriented studies and develop appropriate applications</p> <p>4.2 Encourage biodiversity studies by institutions of higher learning</p> <p>4.3 Promote client-oriented studies to solve processing/marketing needs</p> <p>4.4 Promote commissioned studies for specific development needs</p> <p>4.5 Promote research database for dissemination to all users</p>	<p>FORIG</p> <p>MLF</p> <p>FORIG</p> <p>MLF</p> <p>FORIG</p>	<p>1996</p> <p>-</p> <p>2020</p> <p>1996</p> <p>-</p> <p>2020</p> <p>1996</p> <p>-</p> <p>2000</p> <p>1996</p> <p>-</p> <p>2000</p>	<p>-</p> <p>-</p> <p>-</p> <p>FRMP</p> <p>-</p>
<p>5. Develop Effective Capability for Sustainable Resource Development</p> <p>Attainment of all objectives is only</p>	<p>5.1 Reorganize FD and WD for effective performance</p> <p>5.2 Initiate inter-ministerial cooperation</p> <p>5.3 Widen cooperation with related private and international groups</p> <p>5.4 Review legislation and administrative</p>	<p>MLF</p> <p>MLF</p> <p>MLF</p> <p>MLF</p> <p>MLF</p> <p>FS, WD</p> <p>MLF</p>	<p>1996</p> <p>-</p> <p>2000</p> <p>1996</p> <p>-</p> <p>2020</p> <p>1996</p> <p>-</p> <p>2000</p>	<p>FSDP</p> <p>-</p> <p>-</p> <p>-</p> <p>-</p> <p>FSDP</p> <p>FRMP</p> <p>-</p>

possible by developing the required skills and technical and managerial competence in the human resources employed. Emphasis will be on improved sectoral capability and performance.	arrangements	MLF	1996	
	5.5 Develop innovative and effective funding arrangements		–	
			2000	
	5.6 Develop mechanisms for policy review		1996	
			–	
	5.7 Improve accounting capability and revenue collection		2000	
			1996	
	5.8 Implement sector-wide human resource capacity building		–	
			2000	
5.9 Establish information network for decision-making and policy analysis	1996			
	–			
	2010			
	1996			
	–			
	2000			

2.1.6 Since approval of the policy, sector agencies have continued implementing those strategies that were already in place, i.e. derived from national policies (deregulation of industry controls, value-added processing) and policy reforms and activities under the FRMP (improved revenue collection, revised forest fees, competitive concessions allocation, institutional strengthening and resource management). At the same time, new initiatives were commenced to improve management of the permanent estate (development of collaborative forest management approaches, inventory of off-reserve forest areas, studies to reorganize the Forestry Department, review of forest and wildlife legislation) and to formulate a protected area system plan.

MAP OF FOREST, WILDLIFE AND GAME RESERVES

2.1.7 At this point in time, it is imperative that proper controls be maintained to forestall further encroachment by farmers, poaching of wild animals by hunters, damage by wildfires, incursions of illegal chainsaw operators, over-exploitation of preferred species and resurgence of speculative fellings. The annual allowable cut will have to be strictly enforced by an effective forest service while increased stumpage fees (royalty rates, etc.) are applied to encourage greater efficiency of utilization and better returns to the forest owners. On-going sectoral studies have revealed the need for other priority actions to be addressed within the framework of the sustainability of the forest resource base, the viability of the timber industry and the conservation of wildlife resources and biodiversity. The following paragraphs of this section describe fundamental aspects of these concerns which provide the basis for the Master Plan and which will ultimately determine the scope of projects and corporate development plans of sector agencies.

2.2 Sustainability of Forest Resources

2.2.1 Ghana has established 266 forest reserves, 216 of which occupy 1,634,100 hectares in the high forest zone. The forest reserves were originally created for purposes of ecological stability, watershed protection and windbreaks, while seeking to guarantee the flow of goods and services for socio-economic development. Outside the gazetted areas, the forested land was widely exploited and deforested, leaving today an estimated 400,000 ha. of forest cover ("off-reserves") from which the bulk of timber is currently being extracted. Within forest reserves, there are some 15,000 ha of timber plantations, (mainly Teak, some Cedrela and Gmelina) which currently provide the key source of transmission poles for rural electrification. Recognising the economic and environmental benefits that accrue from such plantations, private interests and communities are currently planting trees on an increasing scale around the country. Based on the 1986-94 forest inventory, forest reserves in the high forest zone have been classified according to the condition of the estate. As indicated in Table 1, apart from timber production and protection areas, 32% of the forest reserves is in a degraded state and needs both rehabilitation (by natural convalescence of some 122,000 ha.) and reforestation (by conversion of 397,000 ha. to timber plantations) to enhance their productive capacity.

TABLE 1 Area of Forest Reserves in the High Forest Zone

<u>Forest Management Category</u>	<u>Hectares</u>	<u>Percentage</u>
Timber production area	762,400	47.0%
Permanent protection area	352,500	21.0%
Convalescence Area	122,000	7.5%
Conversion Area	397,000	24.0%
Total Reserve Area	1,634,100	100.0%

2.2.2 Under FD's forest management system, before completion of the forest inventory the sustained yield or Annual Allowable Cut was set at 1.2 million m3. However, since 1990, this level of harvesting was regularly exceeded, due to inadequate control and the increased incidence of speculative and illegal fellings. The following table illustrates recent harvesting trends based on officially recorded extractions:

TABLE 2 Recent Trends in Timber Harvesting Levels ('000 m3)

<u>Year</u>	<u>On-Reserve</u>	<u>Off-Reserve</u>	<u>Total</u>
1980-84*	337	179	516

1985-89*	588	343	931
1990	1056	234	1290
1991	996	233	1229
1992	587	731	1318
1993	266	1416	1682
1994	505	1295	1800
1995	167	1027	1194
1996	284	881	1165
1997	351	819	1170
1988	604	795	1399
1999	843	626	1469
2000	560	422	982
2001	363	849	1211

[* annual average over 5 years]

Since 1992, there had been an upsurge of fellings on off-reserves, spurred by increased vigilance on reserves and the emergence of markets in the Far East for log exports. However, under the new Forest and Wildlife Policy, the Forestry Department (FD) imposed measures to control timber harvesting from the off-reserves, pending development of comprehensive management plans for both production and protection. At the same time, in late 1995 the Ministry of Lands and Forestry (MLF) temporarily suspended log exports to halt this adverse trend and to give the FD additional time to tighten its felling controls over the off-reserves. The policy is that log exports will only resume if there is a surplus of timber which cannot be utilized by local processors.

2.2.3 Table 3 below presents a revision (1995) of annual sustainable yields from the timber production area of forest reserves, taking account of the need to retain seed trees, protect individuals of rare species, limit the size of openings in the forest canopy, and protect slopes and stream banks. The yields are presented in three groups according to the depletion levels of 64 economic timbers, namely: 15 Scarlet Star species comprising the main traditional timbers now under imminent threat of economic extinction; 17 Red Star species consisting of other traditional timbers for which current rates of exploitation present a significant danger of economic extinction; and 32 Pink Star species (or lesser-known species) some of which are being exploited but not yet at a rate as to cause concern for their economic future.

TABLE 3 Annual Sustainable Yield from Forest Reserves

<u>Species Category</u>	<u>Stems</u>	<u>Volume (m3)</u>
Scarlet Star	5,460	115,900
Red Star	15,300	208,700
Pink Star	38,660	358,500
Total	59,420	683,100

In effect, from forest reserves, sustainable production of the 32 Scarlet and Red Star species currently favoured by industry should be no more than 0.3 million m³ per year. If promotion and marketing activities can achieve increased commercial utilization of 0.2 million m³ of the Pink Star species, then the total on-reserve harvest could be increased to 0.5 million m³ annually. Previously, stocking information on the off-reserves has been sparse, however, the FD

recently completed an inventory which confirms that a harvest of 0.5 million m³ can be sustained for 99 years from off-reserves, provided proper use is made of all timber species (Scarlet, Red and Pink Stars). Together with the increasing yield from plantations as they mature, the sustainable level of Ghana's timber harvest has therefore been set at 1.0 million m³ per year.

2.2.4 Assuming that this level of harvesting can be maintained during the next twenty years and that encroachment and fire damage can be contained to minimal levels, the condition of the forest estate should steadily improve. Firstly, within the production areas there would be incremental growth of trees below the girth limit and a general increase in standing volume, with a consequent increase in the number of larger trees during the period. Secondly, with protective management of the convalescent areas, there would be natural regeneration of species and gradual restocking of the areas with young trees which would form the basis for future yields in the next cutting cycle. Thirdly, provided various plantation schemes can be mobilised, the conversion areas would progressively be reforested with indigenous and exotic species, which would be managed on shorter rotations to provide the bulk of future supplies to the industry. At the same time, savanna woodland management, afforestation and agroforestry initiatives should realise an expansion of the tree cover and forested area of the country.

2.3 **Protection of Forest Resources**

2.3.1 The average annual rate of deforestation since the turn of the century has been estimated at 750 km² (World Bank, 1988). The rate has apparently been accelerating as about a third of Ghana's forest area was reported to have disappeared between 1955 and 1972 (Hall, 1987) as a result of excessive logging due mainly to the lack of effective control. The salvage logging practices of the early 1970s allowed unlimited felling of the largest or over-matured trees on a 15-year felling cycle. In addition, the creaming of high value species before the log export ban in 1979, contributed immensely to forest depletion and degradation. Since then, because of the incidence of a larger number of desirable species, recent logging activities have been more intensified in the semi-deciduous zone than in the evergreen forest, especially in the Brong Ahafo Region. At the same time, illicit logging activities increased to take advantage of the FD's lack of logistics to adequately monitor timber operations and ensure that concessionaires comply with prescriptions.

Hence, the drier zones are now in a critical environmental condition.

2.3.2 Land clearing for agriculture has followed in the wake of logging operations, as part of the traditional bush fallow system of cultivation which involves slashing and burning of forest and grassland. Under this system, the long fallow would allow sufficient vegetal cover to develop. However, long fallows are only possible where population growth and pressure on the land are relatively low. With increasing population growth over the last two decades, the demand pressure on land has been considerable. Demand for subsistence agricultural cultivation has been compounded by increased cash-cropping, urbanization and infrastructural development. Agyemang & Brookman-Amissa (1987) attributed 70 per cent of deforestation to shifting cultivation (bush fallow), and many areas have been badly blighted by farming due to local pressure for land. Such pressures are unlikely to be abated in the short-term, and the number of new farms which prevent vegetal regeneration is likely to increase. For example, in the Volta Region, the natural forest has been completely destroyed by a spate of small

cultivations, thus endangering water supplies and exposing the steep-sided hills above the Volta Lake.

2.3.3 Bush burning has been the cause of most forest degradation in the moist semi-deciduous zones having degraded or destroyed about 30% of the forest in these areas. Bush fires occur annually in the dry season usually from November to May, both intentional and unintentional. Intentional fires are called early burning and are used as a management tool to reduce the intensity of late dry season fires in mature teak plantations. Unintentional fires result from the activities of hunters, palm wine tappers, farmers, etc. who fail to extinguish camp fires. More than 1 million m³ of exportable timber is estimated to have been lost because of fire in recent years. Burnt forest is dominated by pioneer trees of little economic merit and are more prone to fires in the future. Fire is now the greatest threat to the long-term survival of half the forested area in Ghana.

2.3.4 Mining and quarrying, especially by small-scale operators, and large-scale mining of bauxite, manganese and gold pose serious threats to forests in the High Forest Zone. For example, iron ore extraction around Awaso (Afao hills), bauxite mining at Atewa and Tano-Ofin and surface gold mining around Bogosu are serious threats to the forest and the genetic "hotspots" of the wet evergreen zone. A case in point is the large-scale encroachment taking place on the northern edge of Neung North Forest Reserve. Elsewhere, other surface mining operations contribute to destruction of vegetation, including economic trees and cash crops, siltation of streams and watersheds and pollution of local sources of drinking water.

2.3.5 In view of these impacts, since 1994 the FD has embarked on a forest protection strategy aimed at protecting the diversity, quality and sustainability of the forest estate. The strategy is based on a thirty-month botanical survey and a review of the previous protection working circles, which was completed during the forest inventory. It consists of a multi-scale approach: fine-grained protection which is applied to all forest uses, including harvesting, plantation development, farming and mining, to ensure that such disturbances take place only after careful environmental impact evaluation; and large-grained protection which is applied to whole blocks of forests in which disturbance is prohibited for ensuring environmental stability and biodiversity conservation. Fine-grained measures are aimed at maintaining the integrity of the forest ecosystem and its biological content and thus ensure the endemic status of species (especially the rare and endangered species Talbotiella gentii). These measures are being embodied in the revised Logging Manual and proposed guidelines for plantation development, mining and other activities on forest lands. Large-grained measures are aimed at prohibiting use-activity in sensitive areas and include special biological protection areas (SBPAs), hill sanctuaries, provenance protection areas (PPAs), cultural sites, convalence area, fire protection blocks and swamp sanctuaries. In practice, all such areas are being demarcated, mapped and excluded from production operations. However, more scientific work is needed to determine the particular protection needs of SBPAs and PPAs and thereby to develop appropriate monitoring systems. Ultimately, the specific protection needs of each forest management unit will be addressed through its forest management plan.

2.4 Consumption of Wood Energy and Non-timber Products

2.4.1 The prime source of energy in Ghana is from biomass, in the form of woodfuel and charcoal, which accounts for more than 70% of total energy consumed in the country. In rural communities, dependency on woodfuel exceeds 95%. It is reliably estimated that the 14 million m³ of wood consumed for energy production may be valued as high as US \$200 Million annually, and about half of this may be for charcoal. The World Bank projects that this volume could rise to 20 million m³ by the year 2000. In order to meet this demand and to relieve the

pressure on existing forests and woodlands, community forestry and agroforestry programmes have been emphasising the establishment of woodlots. It will be necessary to rationalize these strategies with the policy of promoting the use of liquid petroleum gas throughout the country, as both efforts should be complementary.

2.4.2 Because of the linkage with rural poverty and nutrition and the fact that wood is mainly collected by women and children over long distances, this aspect of production can make a significant contribution to GDP and to raising the basic standard of living of rural communities. However, emphasis needs to be placed on multiple-use trees and coppice-management of savanna woodlands, combined with opportunities for access to other non-timber products of the forest and woodlands. Such products include bushmeat and wild game, poles, herbs, bark, rattan, bamboo, etc. all of which are significant in traditional usage. A systematic approach to development of these products is required to ensure that their utilization will be compatible with conservation of the environment. It should be noted that landowning communities have rights to collect these products and that the collaborative forest management approach has made progress in re-negotiating these rights with respect to an assessment of the existing resource base and deriving acceptable rules on sustainable harvesting and resource development.

2.5 **Viability of the Timber Industry and Wood Processing**

2.5.1 The forest sector is dominated by the timber industry which is comprised of some 250 logging firms and 130 sawmilling, veneering and plymilling companies. In addition, there are more than 200 furniture and wood-working enterprises throughout the country. These activities are reported to employ some 75,000 persons, providing a livelihood for perhaps 2 million Ghanaians. It is estimated that wood processing contributed about 6% of GDP and earned DM 354 million for exports in 1994 (18% of total export income). In addition, the economic benefits from fuelwood, charcoal and other non-timber forest products could conceivably raise the sector's GDP contribution to 8%.

2.5.2 The industry is characterised by an over-capacity of out-dated and inefficient equipment, rated at some 2 million cubic metres per year. There is evidence that this over-capacity is increasing, due largely to new investments wanting to take advantage of the relatively cheap raw material and existing loopholes in investment incentives provisions. At the same time, some of the larger companies have invested in down-stream processing and are successfully finding markets for lesser known "Pink Star" species that have been converted to finished products. More recently, kiln-drying capacity for lumber seasoning has increased substantially in response to the new export levy on air-dried lumber, and this positive trend sets the stage for growth in further value-added production and marketing. It should be noted that many elements of the timber industry have been generally lax in fulfilling their obligation to pay royalties and forest fees when due. As a consequence, considerable revenue balances have been outstanding to the detriment of both the landowners and proper forest administration.

2.5.3 The industry has traditionally concentrated on exports, to the neglect of the local market. In terms of roundwood equivalent, timber exports have nearly doubled over the past five years consuming some 1.6 million m³ in 1994, due mainly to a drastic increase in log exports (Table 4). This adverse situation was reversed in 1995 by increased controls on off-reserve harvesting and the temporary suspension of log exports. Also, apparently in response to the threat of the export levy on air-dried lumber, exports of processed products increased significantly. However, at the same time, supplies to the local market (estimated at a demand of 0.7 million m³ per year) continued to be supplemented by illegal logging and chainsaw

operations. The domestic demand is likely to rise to keep pace with the expanding building construction industry and the growth of the economy (currently 3.8%, targeted at 5% per year). Hence, local consumption could rise to 1 million m³ annually by 2005 and thus absorb the entire AAC.

TABLE 4

Timber Export Trends

<u>Type of Product</u> <u>1996</u>	<u>1990</u>	<u>1991</u>	<u>1992</u>	<u>1993</u>	<u>1994</u>	<u>1995</u>
Logs/poles ('000m3) (million DM)	198 48.0	218 49.1	177 38.7	520 101.6	614 118.0	150 34.7
Lumber ('000m3) (million DM)	202 120.9	183 90.7	232 113.4	239 122.1	259 157.9	275 155.5
Veneer ('000m3) (million DM)	17 21.1	19 20.7	24 26.0	25 25.5	35 36.9	46 49.5
Boules ('000m3) (million DM)	- -	- -	3 1.7	12 5.8	39 19.8	44 21.2
Other ('000m3) (million DM)	9 11.7	8 12.6	6 16.5	13 18.4	17 21.7	33 26.4
TOTAL (million DM)	201.7	173.1	196.3	273.4	354.3	287.3

[Source: FPIB Annual Statistics]

2.5.4 Ghana is thus faced with future export and domestic demands on local timber resources far in excess of sustainable limits. If these demands were to be realised only from existing local resources, the resultant shortages in a few years would signal the demise of the industry, not to mention the punitive international market sanctions that would take effect since the country's timber products would not qualify as "sourced from sustainably managed forests". Consequently, should timber exploitation continue at the present rate, over the next ten to twenty years there will be a significant reduction in the economic contribution of forests in Ghana. Export earnings could fall to zero (or become negative if wood is imported to meet domestic demand), tens of thousands of jobs could be lost, and the non-timber values of the forest would be eroded.

2.5.5 It is therefore crucial that the industry responds favourably to the policy reforms and that the desired changes are effected during the medium-term. Firstly, within a framework of competitive allocation of timber rights, increased royalty rates and enforced industrial standards, obsolete and marginal processing plants should cease operation, leaving surviving mills to improve efficiency and increase utilization of available timber supplies from sustainably managed resources. At the same time, there should be greater use made of logging and mill residues and significant improvement in output and quality of wood products. Secondly, in response to fiscal measures, investment incentives, technical training at the Wood Industry Training Centre (WITC) and the Wood Village, greater diversification of production and marketing should begin to materialise for both domestic and export demand. Where feasible, processors in free zone areas should be encouraged to import timber from cheaper sources for production and re-export of finished products. With the prospect of expanded sustainable raw material supplies from plantation forestry, planning for value-added investments should be pursued with the aim of taking advantage of the enabling environment for growth of enterprise and production.

2.6 Conservation of Wildlife Resources and Biodiversity

2.6.1 The country's wildlife estate comprises 15 gazetted protected areas occupying 12,685 km² (5.3% of the land area). These include 6 National Parks, 6 resource reserves, 2 wildlife sanctuaries and 1 Strict Nature Reserve. In addition, there are 2 other areas awaiting gazettement, as well as 5 coastal wetlands (Ramsar sites), 2 national zoos, not to mention the wildlife occurring outside the protected areas. The protected area infrastructure is generally poor and the Wildlife Department (WD) has been inadequately equipped for years. A major problem has been the shortage of suitable vehicles and the poor condition of the roads, causing large sections of protected areas to be seasonally inaccessible and field staff isolated. Indeed the field staff has had to cope with both the harsh conditions in the bush as well as unsatisfactory conditions of service, compounded by low remunerations, shortage of facilities and inadequate supervision. However, the situation has been improving steadily under the FRMP which has assisted in a comprehensive review and planning exercise for the sub-sector's development aided by the World Conservation Union (IUCN). To-date, management plans have been prepared for 8 protected areas based on biological and sociological surveys. However, implementation will depend on access to adequate funding, while plans for the remaining 7 protected areas are developed.

2.6.2 Currently there is an advocacy for a shift from the traditional preservation approach in protected area management to the more flexible concept of conservation through sustainable use. The World Conservation Strategy emanating from the UN Conference on Environment and Development, as expressed in the Convention on Biological Diversity and Agenda 21, stresses that the issues of environmental conservation and development are not separate challenges but are inexorably linked and need to be addressed as a complex system of cause and effect. Also, there has been increasing recognition that individual protected areas are rarely self-sustaining biological islands but integral components of the bio-physical and social landscape and, if protected areas are to be developed sustainably, they should help to meet the basic needs of local people in an equitable way.

2.6.3 Ghana's wildlife protected areas have a tremendous potential for tourism and tourist visits are increasing steadily. The most developed protected area is the Mole National Park but the standard is still relatively low. With the assistance of USAID, the Kakum National Park is beginning to make a significant impact as it can be tied in with visits to Cape Coast and the historic castles along the coastal zone. Other notable areas for attention include the Shai Hills Resource Reserve for its proximity to Accra and Tema, the Wli waterfalls at Wli Agorviefe near Hohoe in the Volta Region and the Boaben-Fiema Monkey Sanctuary near Nkoranza in the Brong Ahafo Region which is a typical example of a community initiated eco-tourist attraction. The Kintampo waterfalls near Kintampo and the surrounding wildlife are also considered as deserving of attention in the B.A. Region. Already, considerable improvement has been achieved by construction of modest visitor facilities and interpretive exhibits at Kakum National Park in the Central Region with assistance from USAID and Conservation International (an NGO). The park can now boast the only canopy walkway on the African continent. Further assistance is being provided by the US Military to upgrade park access and camps in the Shai Hills Resource Reserve and the Kakum National Park. However, in spite of these prospects and because the attitude of local people has tended to be in conflict with wildlife conservation, the main strategy therefore calls for institutional strengthening and improved management of the present system of protected areas through fostering of private and community involvement in wildlife conservation initiatives.

MAP OF WILDLIFE PROTECTED AREAS

2.7 Public Participation

2.7.1 The Forest and Wildlife Policy emphasizes public participation in district forest management and protection, investment in tree planting and wood production, conservation and propagation of wildlife, value-added processing and marketing of finished products, investment in wood industry modernization, support for awareness and training by NGOs and trade associations. Since the local people own both the land and resources thereon, they have an unalienable right to a significant portion of the benefits accrued. The present laws provide the Government with responsibility for resource management, particularly timber and wildlife, but where it is more efficient for communities to help they are being invited, encouraged and assisted to become involved.

2.7.2 In order to encourage local people to care about the forest and trees in their vicinities, it is appropriate that they be increasingly allowed to participate in decision-making on management of the resource and to benefit from the use of traditional non-timber products of the forest. It is important that such use be based on sustainable management systems, and if possible, enhanced by planting schemes which can expand availability of raw material and generate income-earning and industrial opportunities. Forests play an important role in the lives of most Ghanaians and it is essential to survival of the forests that all Ghanaians become aware of this importance. Through their increased awareness, rural people can be encouraged to become involved in the protection, care and management of forest resources in their neighbourhood. However, they are frequently constrained by inadequacies of land and tree tenure, delayed royalty disbursements and dislocations of adverse concession operations. In this regard, the work being done by FD in developing its collaborative forest management approach in high forest management will ensure a more enabling environment for the rural public to participate and fully enjoy the benefits of enhanced forest management.

2.7.3 Within the forest reserves, it is estimated that there are some 397,000 ha. suitable for planting. There is no estimate for off-reserves and the savanna zone, as these are still subject to shifting cultivation. A nationwide planting target of 200,000 ha. had been proposed for establishment by annual plantings of 10,000 ha. over the next 20 years on unproductive forest lands and in the savanna zone. If attained, the additional tree cover would occupy 10% of the present area of the forest estate. Under the proposed scheme, the intention is to mobilise a wide range of Ghanaians to undertake tree growing ventures within each district of the country. Accordingly, a series of incentive packages will be designed to ensure widespread appeal and positive response across the nation. The tree growing scheme would be implemented largely by mobilising private sector participation, with Government's provision of technical advice, promotional incentives and public education to encourage the involvement of people in special projects that will afforest denuded lands and stream-banks, reforest under-stocked forest areas and rehabilitate mined-out lands, plant and care for trees on farms and establish and manage industrial plantations.

2.7.4 Similarly, there are opportunities for local communities and individuals to raise certain wild animals in pens and thus generate income either through exports or by increasing the availability of bushmeat without affecting the balance of the wildlife. Participants will need technical advice on the systems of husbandry to be utilized and on appropriate facilities for inspection and disposal of the meat and trophies. Public participation also needs to be fostered in the timber industry, particularly by way of investment in value-added processing and initiatives to modernize the industry. The private sector must be encouraged to develop its entrepreneurial skills and to contribute realistic inputs to policy formulation for the wider benefit of the economy.

PART III. SECTORAL MASTER PLAN

3.1 Development Theme

3.1.1 In the light of the sector's situation as outlined above, the aim of the Forestry Development Master Plan is to provide a basis for achieving sustainable utilization and development of forest and wildlife resources, modernization of the timber industry and conservation of the environment, and thereby ensure realization of the objectives of the Forest and Wildlife Policy. The intention is also to maximize the rate of social and economic development of the country and thereby secure the opportunity for optimum welfare and adequate livelihood to be derived by the majority of Ghanaians. The elements of the Master Plan therefore reflect the main national development principles of Government, particularly with respect to maintenance of economic reforms, acceptance of the private sector as the engine of growth and the need to encourage competitive industries based on local raw materials while paying close attention to international trade trends. At the same time, the various proposals have had to take account of the need to improve the state of the environment, the complexities of land tenure and the importance of appropriate and efficient land use. The Plan also recognizes the urgent need to address problems of unemployment and poverty and to support the role of women in development.

3.1.2 Under the coordinated programme outlined in "Ghana-Vision 2020 - The First Step", the country's long-term objective is to raise the status and standard of living to that of a middle-income country. This is to be achieved by creating an enabling environment to attain an 8% economic growth rate so as to satisfy human, rural and urban development goals. For forestry and wildlife, the challenge is to achieve an average production growth of 2.42% per annum in the public sector, meet domestic and international demand competitively, establish eco-tourism services and maximize the production of biomass as a renewable form of energy. These efforts are to be undertaken by employing sustainable multiple-resource management systems and involvement of local communities. However, in the Schedule A of development activities in support of direct production, the NDPC guidelines neglected to list Forestry and Wildlife inputs, such as rural forestry, plantation development, research and extension, improved harvesting and processing, community enterprises.

3.1.3 The National Development Planning Commission (NDPC) in its new guidelines for expansion of Ghana-Vision 2020 as a five-year plan has proposed six major development programmes - Agriculture and Forestry, Industry, Social Development, Economic and Social Infrastructure and Services, Funding of Development and Public Sector. Under Agriculture and Forestry, it identifies the following actions as necessary in the short- to medium-term, insofar as forestry is concerned:

- i) the coordination or close integration of operations between the government ministries/departments/agencies, particularly in extension work;
- ii) the significant improvement and effective implementation of control measures;
- iii) resource management within forest reserves;
- iv) the introduction of off-reserve harvesting controls.

The NDPC guidelines also identify the need for involvement by District Assemblies and communities, for joint preparation of operational manuals by MLF and the Ministry of Food and Agriculture (MOFA), with regard to forest management, agro-forestry, rehabilitation and conservation of renewable natural resources.

3.2 Goals and Objectives

3.2.1 The broad long-term requirements of Ghana-Vision 2020 are readily encompassed within the scope of sectoral development objectives and strategies as spelled out in the Forest and Wildlife Policy. Thus, the goal of the Forestry Development Master Plan is identical with the aims of the policy from which the following objectives are derived:

- i management and enhancement of Ghana's permanent estate of forest and wildlife resources;
- ii promotion of viable and efficient forest-based industries, particularly in secondary and tertiary processing;
- iii promotion of public awareness and involvement of rural people in forestry and wildlife conservation;
- iv promotion of research-based and technology-led forestry and wildlife management, utilization and development;
- v development of effective capacity and capability at national, regional and district levels for sustainable forest and wildlife management.

The first objective is concerned with installation and maintenance of appropriate management systems and controls to guarantee the sustainability of the renewable resources. The second objective focusses on mechanisms that will encourage private enterprises to reform along economic and competitive lines. Most important is the need for an enabling and structured environment in which a balance can be achieved between installed industrial capacity and the limited resource base. Given the threat of resource depletion and environmental degradation, marshalling of wide public support and participation is seen as essential to complement the first two objectives. The fourth objective is also supplementary and is recognised as vital to improved resource management and development as well as greater efficiency in production and processing. Finally, attainment of all objectives is only possible by developing the required technical skills and managerial competence of personnel and institutions, both public and private, with adequate facilities, funding, policy and legislative support.

3.2.2 These objectives can be scheduled into three time horizons, namely, Phase I - 1996 to 2000, Phase II - 2001 to 2010, and Phase III - 2011 to 2020. Based on the respective strategies and imperatives discussed in Section II, the scope and emphasis of each phase has been projected as follows:-

Phase I would comprise:

- consolidation of forest management systems to ensure that critical ecosystems and watersheds are protected and that extracted timber can be certified as "sourced from sustainably managed forests" by the year 2000, and implementation of a Protected Areas System Plan;
- development and launching of flexible schemes for investments in commercial forest plantations, tree farming and propagation of non-timber products and wildlife;
- creation of an enabling climate for rationalization of the timber industry and consolidation of fiscal measures for efficient utilization and increased value-added processing.

Phase II would comprise:

- maintenance of sustainable forest management and National Parks management systems;
- maintenance of commercial production systems and development of product harvesting, handling and marketing facilities;
- promotion of total value-added processing and competitive marketing.

Phase III would entail:

- maintenance of sustainable forest and wildlife management systems;
- maintenance of commercial production systems and improved product harvesting and marketing;
- maintenance of competitive value-added processing industries.

3.3 Phase I Programmes and Activities

Using the NDPC's planning system, the basic details of the first phase in a 5-year plan have been developed, with the following immediate objectives:

- i. to manage the existing forest estate for sustainability of timber and non-timber resources;
- ii. to expand the nation's forest cover for increased yields of domestic and industrial products, rehabilitation of denuded lands, protection of water catchments and stream banks and enhancement of the natural environment;
- iii. to re-structure the timber industry into a viable, integrated wood-processing subsector based on efficient utilization of harvested timber from sustainably managed forests;
- iv. to consolidate protected area management and initiate sustainable utilization of wildlife resources for increased benefits to rural communities while conserving biological diversity.

Recognizing the importance of organizing key functions for effective management, these medium-term goals will be effected through implementation of four main development programmes, namely

Sustainable Forest and Savannah Management,

Expansion and Diversification of Forest-based Products,

Forest Industry Rationalization, and

Wildlife and Protected Area Conservation.

Each programme will provide for public participation, for capacity building of public, private and community capabilities and for disseminating the results of relevant applied research so as to ensure effective implementation of the respective components. Where possible, the programmes will seek to mobilize national efforts for broad participation, including the strong involvement of women, and greater support from the private sector and international donors.

Preliminary indicative costs for implementing the five-year programmes are estimated at some 57,094 Million Cedis over the five-year period. These estimates will be firmed up by the implementing agencies so that positive steps can be taken by MLF to identify and coordinate sources of funding.

Programme 1 Sustainable Forest and Savannah Management

Development Objectives

1. Improved management of existing high forests and sustainable levels of timber harvesting;
2. Increased public awareness and involvement of individuals and communities in protection and management of forest resources;
3. Control of destructive forestland use practices, including uncontrolled bushfires and unplanned exploitation;
4. Development and application of sustainable management systems in savannah woodlands.

Expected Outputs

- a. Harvesting of timber and non-timber products within sustainable levels;
- b. Increased productivity of the high forest and improved quality, productivity and stability of watersheds;
- c. Forests outside the reserves under sustainable system of timber management;
- d. Individuals and communities increasingly involved in protection and management of forest resources;
- e. Reduced incidence of bushfires in forest reserves;
- f. Sustainable management of savannah woodlands.

Development Activities

- i. Sustainable forest management - The main activity will be the transformation of FD into an effective, responsive, decentralized and semi-autonomous Forest Service which will install effective forest management systems to ensure proper supervision of working plans, timber utilization contracts and felling controls for forest reserves and off-reserves. Of prime importance is the ability to maintain systems which can demonstrate to the international community that all timber exports are sourced from sustainably managed forests. Particular attention will be given to collection of relevant fees, in conformity with criteria for sustainable resource development. At the same time, the new FS will intensify local community initiatives to protect forest resources for traditional, domestic and economic purposes and support the reservation of such lands to enable their

legal protection, management and sustainable development. It will collaborate with rural communities in sustainable utilization and management of timber and non-timber products by extending the pilot collaborative forest management programmes to all forest districts in the high forest and savannah zones.

In support, MLF will finalize and install an intersectoral land use plan by finalizing national agreement on land uses to secure permanent forest and wildlife estate. Also, fiscal measures will be employed to control the rate of timber harvesting and ensure appropriate economic returns to landowning communities as well as for improved forest management without erosion by inflation. The main project assistance will be supplied from the Forest Sector Development Plan and the successor to the FRMP (FWRMP). Funding assistance will be needed with respect to fire protection.

- ii. Increased public awareness and involvement - Coordinated activities will include preparation and initiation of a public education and forestry extension programmes to publicize values and benefits of forest conservation, especially as regards threatened species. At the same time, attention will be given to removing constraints caused by the systems of land and tree tenure, the scheduling of logging on farms and access to forest-derived benefits. The education programme will thus be organized to heighten environmental awareness and solicit greater participation of the local communities in forest conservation and management.

All agencies will participate in promoting tree farming among individual and group farmers, institutions and communities through a long-term educational campaign to evolve a culture of tree growing and protection. To this end, FD will review the forest recreation potential for supporting increased tourism growth as a vehicle for exposing the public to nature and the forest environment. At the same time, FORIG will design appropriate mechanisms for disseminating its research information to update the public on current knowledge regarding resolution of technical problems in propagation, management and utilization of timber and wildlife products. These activities are normally funded by government's PIP, but funding assistance will be needed to support the scale of activities proposed and for continuing agro-forestry extension and dissemination of research information.

- iii. Technical skills for increased control of destructive land use practices - In order to ensure that all destructive forest land use practices will be controlled to a minimum, training will be provided for communities adjacent to Forest Reserves on simple but effective soil and water conservation practices and integrated with a rewards and incentive scheme to promote greater soil and water management. Training will include simple fire detection and suppression techniques and applied in conjunction with the national Fire Service and Sunyani School of Forestry (SFS) and Institute of Renewable Natural Resources (IRNR). These activities will be incorporated in each donor project as far as possible to ensure provision of funding assistance.

Programme 2

Expansion and Diversification of Forest-based Products

Development Objectives

1. Expansion of the nation's forest and tree cover for increased yields of domestic and industrial products and environmental enhancement;
2. Development and management of sustainable fuelwood and non-timber products.
3. Development of effective institutional capability to promote and maintain long-term production schemes.

Expected Outputs

- a. Areas on the forestlands without adequate tree cover are fully stocked and properly maintained;
- b. At least a 10 per cent increase in the area of forest and tree cover through afforestation, reforestation, industrial plantations and agro-forestry;
- c. Utilization of fuelwood and non-timber products are sustainable and accessible to communities adjacent to the forest estate;
- d. Initiation and proper coordination of a practical scheme to attract a broad spectrum of private, public and community participation in raw material production.

Development Activities

- i. Increased forest and tree cover - The major activities will be focused on enrichment and restocking of degraded forest areas and concessions, establishment of plantations on suitable conversion areas and support to community forestry and agro-forestry needs. It will be necessary to identify and survey areas to be enriched and restocked, plan and organize work programmes to be executed by districts forest staff, communities and institutions.

Technical information and incentives will be needed to support successful enrichment planting, reforestation to re-stock concessions, denuded lands and establish timber on savannas, farms, mining areas, private lands, rehabilitation of failed plantation forest lands with fast growing species both indigenous and exotics. Also, evaluation and application of research knowledge in silvicultural and regeneration and inexpensive enrichment planting techniques. The MLF will support the objective by revising land and tree tenure systems and entrenching tree ownership rights in the tree planter/land owner. MLF will also design an adequate mix of incentives to encourage private sector investments in industrial plantations development. These activities are essential to the future sustainability and conservation of forest resources and will require substantial technical assistance and funding as early as possible.

- ii. Development of fuelwood and non-timber products - To develop fuelwood and

non-timber products and promote easy accessibility and sustainable utilization by communities adjacent to the forest estate, it will be necessary to disseminate scientific and local knowledge about fuelwood and non-timber resources in terms of their location, growth habits, cultivation and harvesting potentials to be used in the resources management and planning. Also, based on an inventory of non-timber resources, harvesting rules will be developed and instituted widely, using collaborative approaches. A review of wood energy and non-wood energy potentials will be carried out and the feasibility to promote planned development for efficient and sustained utilization will be determined.

Based on the results of the studies, initiatives will be taken to expand agro-forestry demonstration farms and practices and build up capacities of farmers and local entrepreneurs to invest in non-timber products for domestic and industrial use. Where feasible, encouragement and assistance will be provided to indigenous commercial charcoal burners to establish their own woodlot for charcoal burning. At the same time, the initiative will be taken to promote enrichment plantings to improve the productivity of the existing non-timber plantation species like rattan, bamboo, etc. This activity presents an excellent opportunity for poverty alleviation and an increased role for women. Technical assistance and funding will be needed.

- iii. *Institutional capacity to develop and maintain long-term production schemes* - This programme will require concentrated effort to mobilize financing and technical assistance, clear constraints of land tenure, identify suitable sources of seed and ensure production and supply of genetically improved growing stock. Therefore special expertise which does not presently exist, will need to be developed and located in an institution capable of fulfilling this dynamic role.

Recognizing that the MLF is unsuited for this role and that FS will be fully occupied with sustainable management of the forest estate, it is proposed that attention be given to building the necessary institutional capacity within the Forestry Commission's Secretariat. Alternative approaches would consider establishing a Development Division in FORIG or creating a subsidiary company under the TIDB. The government will need to study the options and take an early decision on this proposal. Subsequently, technical assistance and funding will be needed to support effective implementation in the short-term.

Programme 3. Forest Industry Rationalization

Development Objectives

1. Structural reform to facilitate an effective balance between the timber resource base and industrial capacity;
2. Improved and modernized milling efficiency and increased value-added marketing;
3. Increased processing capacity for plantation and non-timber products.

Expected Outputs

- a. A reformed Timber Industry Development Board which will be more responsive to the development needs of the timber industry and more effectively managed;
- b. Industrial capacity will be restructured and modernized in line with available raw material supplies;
- c. Wood utilization and value-added production will be more effective aimed at competitive domestic and export marketing and maximum return on investment made more efficient;
- d. A skilled and highly-valued labour force will be developed, capable of efficient production of quality goods and services that can satisfy sophisticated consumer demand;
- e. Capacity investment and utilization of plantation and non-timber products will be increased based on market demand and standards and sustainable available raw materials.

Development Activities

- i. Structural reforms to balance timber resource base with industrial capacity - The main activity will be the planning and installation of a Timber Industry Development Board, re-merging the TEDB with the FPIB in a restructured organization which will plan and promote the modernization of the timber industry. The new TIDB will develop suitable strategies and incentives to enable the elimination of marginal and inefficient plants. In support of balancing capacity within resource limitations, it will be necessary to strengthen the capacity of the present Inspectorate Division (FPIB) to enable effective monitoring of safety and environmental issues at mills, as well as individual performance of processing mills according to manpower, product quality, operational efficiency and output recovery criteria. Efforts will be made to strengthen the professional capability of the timber trade associations, the full cooperation of which is essential to the success of the Programme.

A key activity will be the upgrading of surviving mills through the stimulus of fiscal incentives to overhaul and modernize conversion equipment. Support will be given to promotion of local market demand, through data surveys and fiscal incentives to encourage processing for local needs. However, at the same time it will be necessary to discourage establishment of new sawmills and control the installation of additional head-rigs in existing mills by applying stringent requirements for primary processing, but also to encourage modernization of surviving mills, for example by adaptations to take small logs and plantation products. It is envisaged that this activity will be supported by the FRMP and its successor, the new FWRMP, in addition to other donor inputs.

- ii. Increased mill recovery and value-added processing - The restructured TIDB will intensify its efforts to promote improved recovery and value-added production by encouraging efficient secondary and tertiary processing. It will conduct feasibility studies of desirable initiatives to identify marketing opportunities and promote targeted investment options, and will facilitate

upgrading of technical skills and productivity through support of wood processing and value-added wood villages. In support, the Inspectorate division will institute new grading standards and encourage private capability for quality control and promote increased utilization of Lesser Used Species to replace scarce supplies of traditional Scarlet and Red timber species.

An essential activity will be to encourage freezone industrial processing by studying and pursuing investments for production of re-export items based on imported raw material from cheaper sources and using local excess capacity and skills. This activity will be pursued through coordination of PIP funds and donor assistance from ITTO, EU and other aid agencies.

- iii. *Develop processing capacity for plantation and non-timber products* - TIDB will promote processing of plantation and non-timber products, in cooperation with the National Board for Small Scale Industries to develop value-added processing of a diverse range of products. To this end it will commission specific industrial processing research to determine the focus of feasibility studies and market promotion. Also, it will identify growth-opportunity areas and provide technology and training at Wood Industry Training Centre to ensure development of efficient capability and pool of skilled workers, while assisting in the development of the Wood Village to provide the needed impetus for tertiary processing sub-sector and promote the utilization and marketing of lesser-used species.

In support of this activity, FORIG will review FD's inventory of non-timber resources and their potential so as to determine the focus of utilization research, processing and marketing for rural development opportunities. At the same time, TIDB will promote the modernization of existing facilities to maximize income-generation and competitive advantage, and will include a review of pulp and paper feasibility to determine future scope for satisfying local and regional demand. In support, appropriate grading standards and private capability to increase marketability of quality products will be developed. Again because of the prospects for poverty alleviation as well as biodiversity conservation, it is envisaged that broad technical support can be attracted from the international community.

Programme 4. Wildlife and Protected Area Conservation

Development Objectives

1. Establishment of a viable system of ecologically representative protected areas;
2. Development of specific tourism attraction areas and promotion of eco-tourism;
3. Increased marketing opportunities for increased income generation from wildlife products;
4. Increased public awareness of benefits of conservation and biodiversity.

Expected Outputs

- a. Adequate protected areas created in under- or unrepresented ecological zones of the country;
- b. Protected areas adequately inventoried and management plans developed;
- c. Individuals and communities become actively involved in sustainable management and development of wildlife resources;
- d. Trading in wildlife resources made more sustainable and profitable.

Development Activities

- i. *Establish a viable system of ecologically representative protected areas* - The WD will complete its plan and review of nationwide ecological zones and species inventory and will continue development of inland and coastal wetland (RAMSAR) sites. It will rehabilitate degraded mangrove resources and evolve management plans to ensure long term sustainable development of the mangrove systems. It will train and involve communities in sustainable management of protected areas and will identify suitable areas for reservation. WD will establish and maintain inter-agency collaboration with institutions within the renewable natural resource sector and will plan and implement infrastructural development programme for effective management of the protected areas. Attention will be given to institution of a rational system of fees and the review of legislation and international conventions on wildlife development.

WD's planning team will be strengthened to maintain a continuous inventory of wildlife resources, both in protected areas and outside, so as to monitor trends in population and distribution. These activities are presently being supported by the FRMP (and its successor FWRMP), a World Bank grant and ODA and EU projects.

- ii. *Tourism attractions and ecotourism promotion* - Planning for ecotourism development will first require collection of relevant data and identification of potential tourist attractions, type of appropriate facilities and the management requirements of each location. Based on such surveys, WD will collaborate with the Ministry of Tourism to promote and market tours and private participation in related services, initiate provision of basic infrastructure to encourage investment in ecotourism, spearhead essential training to participants and local people. It is envisaged that technical assistance will be needed to support this activity.
- iii. *Income generation and marketing of wildlife products* - These activities are essential to harnessing local community involvement in conservation. Priority attention will therefore be given to planning and promotion of local commercial activities based on utilization of wildlife resources. It will be necessary to provide adequate incentives for private sector to breed wildlife species in captivity for domestic consumption and export, establish demonstration wildlife breeding farms and provide training for local investors and to update and revise the commercial laws and streamline wildlife export procedure. This activity is also seen as a favourable opportunity for poverty alleviation and biodiversity conservation and should be attractive to technical assistance.

- iv. Public education and participation - The WD will plan and implement community based projects, prepare and disseminate conservation educational material. The objective will be supported by establishing a coordinating committee, a subcommittee of the Forestry Commission, to advise the Ministry on wildlife issues and to coordinate the activities of non-governmental organizations in the wildlife subsector. It will encourage the formation of wildlife clubs in all educational institutions and among Journalists, and will liaise with local agencies and District Assemblies to establish sub-committees on wildlife issues, and also to establish Management Advisory Boards for all protected areas. This activity is being funded by the PIP and EU and is expected to be a component of the FWMP.

3.4 Research and Training Activities

The successful implementation of the medium-term plan will depend on supportive inputs of research and training activities directed to relevant needs within the forest sector under each development programme. In planning their individual work programmes and budgets, implementing agencies will be encouraged to focus attention on research and training inputs which would facilitate attainment of optimum levels of output and performance. Where possible, efforts should be made to forge partnerships universities and benevolent agencies abroad which assist with exchange fellowships, as well as research grants and bursarsies for special environmental studies.

Research needs in the medium-term will entail:

- a. Updating knowledge in natural regeneration silviculture and genetic improvement needs of current plantation species;
- b. Assessment of trees and crops interaction, crops and fuelwood mixture trials and indigenous species for use in plantation development;
- c. Conducting studies on:
 - Economics of plantations and wildlife breeding;
 - Cultivation of various NTFPs;
 - Processing and marketing of NTFPs (domestic and international markets);
 - Propagation of indigenous species;
 - Social Forestry issues - issues on ways of involving communities in forest planning, management and development;
 - Fire management techniques;
 - Regular censuses of wildlife in trade for certification of sustainable exploitation;
 - Processing of value-added products.

These research activities will be carried out by FORIG and IRNR on a contractual basis for the lead agencies responsible for implementation of the programmes.

Human resource development needs under the medium-term plan will be targeted at satisfying the need for effective performance and achievement of targets under each programme, as well as the longer-term capacity needs of the sector as a whole. The implementation of the plan requires skilled, self-motivated and capable manpower in both the private and public sectors. Under the planned activities therefore, training facilities in the traditional training institutions would be revamped to meet the demands of the various implementing agencies and opportunities for refresher courses in-country would be promoted. In consultation with beneficiaries, the MLF

will review the skill training requirements of the sector and determine how the existing institutions can best meet these needs. Of particular importance is the need to build the capacity of trade associations and interest groups to enable them make a more positive contribution in the sustainable development process.

PART IV. IMPLEMENTATION

4.1 Major Constraints

The main constraints to policy and plan implementation include obsolete laws and regulations, limited financial resources and the inadequacy of line agencies and their working conditions. These factors are particularly critical under the existing socio-economic situation of pervasive poverty which contributes to agricultural encroachment of forest reserves and illegal timber operations. At the same time, the trade associations and respective agencies have not yet developed the mutual appreciation that is necessary for fostering an enabling environment. The following paragraphs discuss the current efforts being made to address some of these constraints.

Forest and wildlife legislation

4.1.1 Cabinet's review of a draft Timber Rights Bill is well advanced towards replacing the provisions of the Concessions Act 1962 (Act 124) with an ordinance that grants timber rights so as to secure sustainable utilization of timber resources. The proposed legislation would enable allocation of timber rights on a competitive basis requiring commensurate responsibilities on the part of timber contractors capable of sustainable forest management within the guidelines established by the FD. Provisions of the Bill would include a timber utilization contract to be agreed between the concessionaire and the GoG for a specific area, AAC and duration, to be operated according to prescribed terms and conditions (including compensation of farmers for crop damage caused by contractors through felling and extraction of trees). The Act would apply to timber resources on public and stool lands but **would exclude trees planted by individuals and communities**. Under the Regulations, it would allow for a timber royalty formula based on fixed percentages of the FOB value (roundwood) of timbers, according to their level of depletion or sustainability. Enactment of this Bill would reinforce the measures introduced for improved control of the timber sector and would complement the fiscal incentives of the timber export levy established under the Trees and Timber (Amendment) Act, 1994 (Act 493).

4.1.2 Recently, work has commenced on drafting a code of forest legislation which would consolidate and update the present set of forest laws and regulations. **Of particular importance will be the provision of incentives for industry rationalization and ownership rights to persons who plant and care for trees. Also, legislation is being drafted for the establishment of the Ghana Forest Service to take over the responsibilities of the present Forestry Department regarding management and protection of the forest estate.** However, this legislation will need to be harmonised with the decentralised provisions authorised under the Local Government Act (1993), particularly with regard to functions which can be controlled at the District Assemblies level. A draft Wildlife Conservation Bill has already been prepared together with detailed regulations which would consolidate and update the laws relating to conservation of wild animals and vegetation. The proposed legislation would confer duties and responsibilities on wildlife officers and local committees charged with management of protected areas. With regard to both forest and wildlife laws, attention will be given to special training of the police and judiciary so as to secure their full support and understanding in the enforcement

of the reformed legislation.

Financing of sustainable management and development

4.1.3 The Master Plan will pursue the essential strategy of conducting regular reviews of forest (and wildlife) fees to reflect the economic value of the resource and to recover optimum revenues for supporting the costs of sustainable management. Under the Forest and Wildlife Policy, government has given its commitment to the principle that "a share of financial benefits from resource utilization should be retained to fund the maintenance of resource production capacity and for the benefit of local communities". An important aspect of an improved fee structure is the administrative capability to collect such fees timely and to account for them in a business-like manner. It is projected that the TIDB and the new FS will be able to meet their recurrent expenses on this basis, thus relieving the government of a substantial burden. However, both FC and WD will require continued government subventions. Apart from that, development programmes will be financed by Government 10% contribution in cash and in kind, in conjunction with coordinated donor assistance, including concessionary international loans. Emphasis will be placed on project assistance that will enable a greater degree of local independence in sustaining activities after a project has ended.

4.1.4 One of the main forestry development opportunities lies in establishment and management of largescale timber plantations, and a target of 200,000 hectares of fast-grown indigenous and exotic species over a 20-year period has been proposed. The major constraints are land tenure, access to funding, availability of reliable sources of genetically improved seed and lack of experience with extensive land transformation projects. Although current national capability is limited, it is crucial that there estimated 397,200 ha. of degraded areas within forest reserves be reforested with indigenous (e.g. Kusia, Wawa, Ceiba) and exotic tree species (e.g. Eucalyptus deglupta, Cedrela, Gmelina) to meet future raw material demands. At the same time, vast areas of unused lands can be found outside forest reserves in the transitional and savannah zones and deserve to be brought under protection and into production. However, obtaining access to land is likely to be cumbersome because of the complex customary ownership pattern, and an initial start may have to be made within forest reserves with the support of the respective "stools". Within the transitional zone, encouragement of afforestation with exotic species (Teak, Cassia, Pine, Cedrela, etc.) should be continued under the rural forestry and agroforestry schemes. Local funding would most likely be made available from the common fund for District Assemblies, as well as from NGOs, GTA/GTMO/FAWAG and part of the proceeds derived from the timber export levy.

The MLF has been considering the merits of a concept that with technical assistance GOG would first identify specific sites and then invite bids from qualified contractors for plantation establishment targets. Payment to the contractors would be made from grant funds according to contract specifications. After three years, successfully established plantations would be divested to interested parties, whether in industry, communities and/or stools, who would be financed by mortgages through a special forest sector loan. Management of the plantations up to maturity would be contracted to capable forest management firms whose costs would be charged to the mortgages. The returns from sale of divested plantations would be ploughed back into the forest plantation scheme to sustain an annual establishment target over 10 to 20 years. In the long-term, timber sales from the plantations would be expected to repay the mortgages and rental of the land, leaving a profit for the investor and funds for starting a second rotation.

Institutional reform and capacity building

4.1.5 The FD's past performance has been severely handicapped by its civil service structure and it is now accepted that this structure must be reformed if there is to be any prospect of effectively implementing forest management policy objectives. What is envisaged is an efficient, well-resourced agency capable of operating in a business-like manner and offering active, responsive and dynamic services to the nation and individual clients. Critical to successful reform is the need for the FD be reorganized outside of the strictures of the civil service and empowered to generate and manage its revenues. Details of the proposed structure have been developed but the feasibility of its financing and effectiveness are still to be proved. It is expected that when this is done, the proposal will go to Parliament for ratification. In the meantime, technical assistance has been obtained from the ODA to facilitate implementation of the reform process over the next two to three years.

4.1.6 The creation of an enabling environment for the restructuring of the timber industry will rest heavily on the successful reorganization of the TEDB and FPIB into a Timber Industry Development Board whose governing board will be comprised primarily of private sector representatives. The new mission of the TIDB will be to promote the industry's modernization and to coordinate implementation of the Forest Industry Rationalization Programme. What is envisaged is an articulate and dynamic agency which will employ innovative means of translating the programme into reality, while eliminating "red tape" and ensuring that order and discipline is maintained within the sector. Where necessary, the existing legislation will be amended to allow for the modification of the Board's functions.

4.1.7 The WD has been strengthened in the areas of resource planning and management but it still lacks adequate numbers of trained staff to man the protected areas and to coordinate the protected areas system. The WD is also still restricted by its preventionist background and requires substantial institutional support to adopt the new conservation philosophy that relies on involvement of communities adjacent to the protected areas. Particular attention will also be necessary with regard to realistic fees for access to and utilization of wildlife resources so as to maintain a reasonable balance between the cost of "bush meat" and conservation services to local consumers and a demonstrable return of benefits to the communities in which the protected areas are located.

4.1.8 Although MLF has made progress in developing its policy planning monitoring and evaluation capability, the Division is relatively inexperienced and needs further tightening of its operational systems. Within the framework of the National Institutional Renewal Programme, PPMED/MLF needs additional personnel to cover natural resource economic analyses, land sector monitoring and budgeting of the Ministry's programmes and projects. At the same time, MLF needs to clarify the role of the FC and to strengthen the capability of the FC Secretariat to analyse priority concerns and to ensure that this clarification is reflected in appropriate legislative and constitutional amendments.

Private Sector Apathy

4.1.9 Although there is a great deal of support for policies to improve and maintain environmental conditions, tangible support is mainly being demonstrated at the village and community levels. Indeed it appears that well-informed representatives of the dominant timber industry have decided to ignore the imperatives of resource conservation and have continued to resist government's efforts to control timber depletion and increase efficiency of wood utilization. This resistance has been most evident in the current stance of the Ghana Timber Millers Organization (GTMO) against the introduction of the timber export levy on air-dried lumber. In particular, while technical advice and installed kiln-drying capacity have been

increased, timber producers are still not committed to the national policy of value-added processing, even though market demand and prices indicate significantly greater benefits are possible. This type of apathy needs to be addressed, hopefully through improved dialogue and partnerships between public and private sectors.

4.2 **Administrative and Institutional Arrangements**Error! Bookmark not defined.

4.2.1 The Ministry of Lands and Forestry has over-all responsibility for sector planning and policy direction and for monitoring and evaluation of development policies and programmes. The Ministry's mission is to strengthen its capability so as to ensure that an enabling environment and adequate capacity and infrastructure are provided for both private entities and public agencies to perform at their best in implementing the development programmes. The MLF will consult with its agencies to determine and agree on the assignment of unallocated responsibilities and functions and ensure clarity of purpose for its strategies. It will maintain optimum coordination of its programmes through the existing Project Coordinating Committee which meets bi-monthly. The Ministry will provide the necessary approvals and support by way of fiscal measures, incentives, institutional reform and capacity building, as well as essential coordination with other Ministries and government agencies to ensure attainment of planned objectives.

4.2.2 The Forestry Commission - provided under the 1992 Constitution of the Fourth Republic - has been established with responsibility for "the regulation and management of the utilisation of forest and wildlife resources of Ghana and the coordination of policies in relation to them". The members of the FC are drawn from a wide cross-section of the society and are expected to be in touch with the grassroots of the population for increasing public awareness and participation in all aspects of sustainable resource development. The Ministry's implementing agencies are all represented on the FC and thus are available for providing the Commission with progress reports and technical information connected with their specific areas of responsibility. Examination and analysis of the 11 statutory functions established by the 1993 legislation reveals that the FC is mainly an advisory forum for consensus building, specifically with respect to national policies and practices and related sectoral issues. In this regard, within the framework of a participatory democracy, the Commission could play a major role as a broad-based national forum in championing the need for District and local concerns to be taken into account in both policy formulation and sustainable development of renewable natural resources.

Under the Master Plan, the FC will be expected to take an active interest in the progress of the sector development programmes, not as a monitoring agency, but rather as a high level "think tank" and "corporate board of directors" to facilitate inter-sectoral debate and harmonious coordination of sectoral development. In performing its statutory functions, it will need to examine the details of resource management regulations, the options for desirable investment and resource utilization and the feasibility of proposals for financing development initiatives. However, it will also need to be careful that the FC Secretariat avoids any tendency to pursue functions that would cut across the responsibilities of MLF and other sector agencies.

4.2.3 The Forestry Department has been the line agency responsible for management of the national forest estate and implementation of forestry programmes. Its performance in recent years has been hampered by its civil service structure and it is now recognised that performance can only improve after significant institutional reform as a Forest Service with autonomy for controlling its personnel and finances. The reformed FS will continue to exercise the mandate for management of the forest estate and will concentrate on effective enforcement of the forest laws and regulations governing forest reserves and off-reserve areas, while offering

technical advice and support to individuals, communities and Districts that benefit from forestry in various ways. The FS will finance its core functions from revenues derived from forest management and timber utilisation operations (concession rent, timber royalties and export levies, etc.), while its extension functions and other services will be funded from central government and donor sources.

The new Forest Service will be responsible for implementation of the major activities of the Forest and Savannah Management Programme. It will manage the forest estate (high forest reserves, off-reserves and savannah woodland reserves) by appropriate systems in keeping with the Forest and Wildlife Policy guidelines. It will assist the Expansion and Diversification of Forest-based Products by providing development and technical advice to private individuals, communities and interest groups regarding timber and fuelwood plantations, farm forestry, etc. and will continue to collaborate closely with the Agroforestry Unit of the Ministry of Food and Agriculture, as well as the Extension Services and District Assemblies.

4.2.4 The Wildlife Department is responsible for controlling the utilization of wildlife resources, protection of their habitats and for scientific management of protected areas. The main thrust of its activities is biodiversity conservation for inherent benefits to present and future generations. As a civil service department, WD has been severely hampered by the prevailing adverse financial situation and sees no possibility of emulating the proposed reform of the FD as wildlife fees alone could never sustain the rising costs of management. Nonetheless, the department needs to be strengthened to ensure satisfactory coordination of the protected areas management system being developed and to maintain an effective monitoring capability. The Wildlife Department will be responsible for executing the main activities of the Wildlife and Biodiversity Conservation Programme.

4.2.5 The Timber Export Development Board has been involved with export marketing and promotion of timber and wood products. TEDB has also been a source of intelligence on trade trends in tropical timber. In order to ensure successful implementation of value-added processing, TEDB needs to focus on the rehabilitation of the industry and on fostering efficient delivery of improved goods and services to satisfy both export and domestic markets. Therefore, a revised mandate, with less emphasis on marketing (except in support of smaller firms) and greater private sector involvement, is proposed under a restructured Timber Industry Development Board. The new Timber Industry Development Board will be responsible for implementation of the Forest Industry Rationalization Programme.

4.2.6 The Forest Products Inspection Bureau is responsible for inspection and certification of timber products, their measurement and grading, as well as their sale and pricing. Although the performance of FPIB has not always been up to expectations, the agency has benefited from institutional strengthening under the FRMP. In keeping with the objectives of the Master Plan, it now requires a thorough review of its purpose and capacity needs and how these may be merged within the restructured TIDB. In particular, where it had lacked initiative in pursuing infringements of the law regarding timber in transit, there is need for tighter discipline within its field staff. The Inspectorate Division will thus be strengthened to become the standards bureau for timber products, to promote quality and grading in the industry and to be the arbitrator in cases of trade disputes.

4.2.7 The School of Forestry is the sole training institution in Ghana which provides technical training programmes in the theory and practice of forestry and related sciences. SFS turns out an average of 70 technical forest officers yearly and offers short-term training programmes for forest and wildlife guards. The school is slated to be part of a national system

of technical colleges under the Ministry of Education, and would be strengthened to satisfy the needs of both public and private interests of the sector at all levels.

4.2.8 Institute of Renewable Natural Resources (IRNR) is a tertiary institution which provides diploma, graduate and post-graduate (M.Sc., M.Phil.) training in renewable natural resource management and development. Most management level staff in the sector are graduates from this institute which produces an average of 45 graduates per year. However, there is need for the IRNR courses to be more practical and field oriented, possibly through a strong internship programme, so as to minimize the time which its current graduates now require for adaptation to the work environment. Under the plan, the Institute would be commissioned to play a lead role in technical and professional training to equip personnel for carrying out activities that will enhance both knowledge and skills in the sustainable development of forest and wildlife resources.

4.2.9 Forestry Research Institute of Ghana - has developed its capability to undertake quality research in the fields of plantation development, natural forest management, wood and non-wood product utilization and marketing. It now operates on a contractual basis and is expected to play a crucial role in providing the technological basis for the sustainable management of forest based resources and for the growth and modernization of the utilizing industries. Unfortunately, FORIG has been unable to disseminate much of the knowledge it has acquired from past research, and there is some degree of uncertainty that some research aspects are being repeated.

4.2.10 Timber Trade Associations - the Ghana Timber Association (GTA), the Ghana Timber Millers Organization (GTMO), the Furniture and Wood Products Association of Ghana (FAWAG) and the Small Scale Carpenters Association (SSCA) - all have an important role to play in the development of the sector. Hopefully, these associations will be able to develop a more positive working relationship among themselves and with the relevant sector agencies. Under the Master Plan, they are expected to play a partnership role with the public sector, hence, every assistance will be provided to enhance current efforts to resuscitate the Association of Ghana Timber Industries (AGTI). Under this umbrella, the timber trade associations will be able to contribute and benefit from the Forest Industry Rationalization Programme by way of financing, promotional technical advice and skills training. It is expected that these inputs will be effectively utilised by the private sector and will result in the rehabilitation and modernization of the industry as a whole. Ultimately, these results will be demonstrated by greater viability of the operating firms, increased employment, reduced wastage and greater value-added production of a wide range of competitively priced quality goods.

4.2.11 Traditional Communities and District Assemblies - the traditional landowning communities, comprising stools, skins and clans, have an important role to play towards realization of the goal of the forest and wildlife sector. This role will increasingly be fostered through the collaborative management approach and improved administration of royalties. The District Assemblies have been assigned certain responsibilities for community forestry and wildlife conservation functions and will be assisted with technical advice from FD and WD. It is expected that they will use their shares of the District Assemblies Common Fund to implement related projects and that they will become more proactive in matters regarding the welfare of rural people, through their environmental committees.

4.3 Projects

The following section provides a brief sketch of projects and proposals for achieving various facets of the programmes envisaged under the Master Plan. (See Annex 2 for summary).

4.3.1 On-going and New Projects

Programme 1

Forest Sector Development Project (1996-98) is being funded by ODA to assist the legal, structural and financial transition of the Forestry Department to a Forest Service which would be independent of the Civil service and capable of efficiently implementing forest policy and laws. Initial funding of about 1.7 million Pounds is proposed for commencement May 1996 at the expiry of ODA's FIMP component of FRMP.

Joint Forest Management Project - a private sector initiative launched in 1995. Located in Nzema East District, Western Region the project is sponsored by Ghana Primewoods Ltd in association with the local community and assisted by a grant from DANIDA to implement sustainable forest management of approx. 100 sq. miles of forest reserves and off-reserves, as well as appropriate land use practices and rural development activities.

Programmes 1 & 2

Forest Protection and Resource Use Management Project (1993-2003) in the Volta Region, comprising DM 25 million in GTZ/KFW grants and loans, to relieve the pressure on forest reserves by buffer zone protection, development of woodlots, while improving community economic activities. In its second phase, commencing 1996, the project hopes to complete a forest inventory, demonstrate fire protection and promote plantation development in the northern areas of the Region.

Programmes 1, 3 & 4

Forest Resource Management Project (1989-95), has been the major vehicle for change in the sector, with funding by IDA/DANIDA/ODA/GOG to provide sectoral reforms and institutional strengthening for 11 sector implementing agencies. The FRMP was extended until June 1997 to facilitate completion of civil works and to bridge the planning and initiation of a new project.

Programmes 2 & 3

ITTO Special Projects - a series of mini-projects funded by ITTO in the following areas: studies by FORIG on utilization and marketing of lesser-used species and genetics of Odum; tree planting with Evergreen Club of Ghana; development of nurseries by 31st December Women's Movement for out-grower plantings.

Subri Industrial Plantations Project - currently under the Ministry of Trade and Industry, the project was established in 1984 to convert 4000 ha of indigenous forest land to Gmelina pulpwood plantations with funding from the African Development Bank. The project objective needs to be revised in keeping with the Forest and Wildlife Policy and opportunities for tertiary processing.

Programme 4

Protected Area Management and Wildlife Conservation Project (1996) has been approved for technical assistance to be funded by a World Bank Grant of US \$600,000. Geared to fill specific gaps left under the FRMP, the project would develop a master plan of Ghana's protected area management system, initiate conflict resolution and community participation, undertake environmental impact assessments and park infrastructure studies. The project will be implemented by IUCN and WD.

Protected Area Development Programme (1996-98) has been approved recently for funding by the European Union. The project will elaborate the necessary management and development plans for two wildlife protected areas of the Western Region (Ankasa and Bia) and is estimated to cost US \$6.1 million.

Lower Volta Mangrove Project (1996-98) This is an ODA-funded project costing 288,000 Pounds aimed at identifying management approaches to landowner and community-based rehabilitation and sustainable use of degraded mangroves in Songor and Anlo/Keta lagoon systems.

Coastal Wetlands Management Project under the Ghana Environmental Management Project, funded by the Global Environment Facility (US \$7.2 million) and aimed at management and research activities connected with 5 RAMSAR sites which provide habitat for 80% of known migratory and water birds.

4.3.2 Projects in the Pipeline

Programmes 1 & 2

Tropical Rainforest Conservation Project (1996-2001) to be funded by the Dutch Government in specific locations of the high forest and transition zones. The proposed assistance would include integrated high forest management, reforestation trials with indigenous timber species and fire prevention techniques and training. Indications are that a technical cooperation package of some US \$4 millions is likely to be initiated in 1996.

Programmes 1, 2 & 3

Development of a Forestry Information Centre (1996-1999) at FORIG, Kumasi with the assistance of the British Council under a grant of 185,000 Pounds from the Overseas Development Administration of the UK. The objective would be to provide targeted information to researchers, trainers, practitioners and related professionals in forty institutions in Ghana.

Programmes 1, 3 & 4

Forest and Wildlife Resources Management Project (1997-2002) - application has been made to IDA for preparation and funding (possibly with DANIDA) of a project to succeed the FRMP (now proposed for to end June 1997 after a second year's extension to complete on-going civil works and planning of the new project). The project envisages continued assistance to capacity building within the MLF and its key agencies, to support implementation of integrated management systems for sustainable development of forest and wildlife resources in the high forest and savanna zones and improved services to the private sector towards greater production

efficiency and modernization of the timber industry.

Programme 2

Western Region Development Project (1996-2000) comprising some 10 million ECUs funded by the European Union, primarily an agricultural project in which a forestry component (approx. US\$3 million) is likely to be supported in developing a seed bank, initiating rubberwood utilization, and promoting small-farmer reforestation of degraded forest areas. The project activities would be implemented in collaboration with regional field agencies, whether public, private or NGOs. It is hoped that the donors may be open to other forest sector strategies, such as financing investment in pole production stands and facilitating the decommissioning of obsolete and inefficient primary processing plants, as a means of ensuring sustainable timber utilization.

Programme 3

Integrated Development Programme for the Wood Industry System (1996-2001) was recently suggested by UNIDO (US \$13.5 million). The programme envisages multi-donor participation and joint management to provide policy support, investment promotion and technical cooperation within the private sector to develop sustainable processing and marketing in a comprehensive manner.

Woodworking Sector Development Programme (1996-1999) - proposed assistance from the European Union (4.85 million ECUs) to provide export incentives for utilization and marketing of lesser-used species, technical assistance to sawmilling and tertiary industries and support to Accra Polytechnic and the WITC. The programme would mainly promote increased export of lesser-used timber species as a strategy to reduce pressure on the popular timbers and enhance sustainable forest management and improved levels of skills and marketing capacity within the wood industry.

4.3.3 New Proposals and Possibilities (Annex 3)

Programme 1

Forest-based Livelihood for Rural Dwellers, to develop income-generating opportunities and support activities compatible with sustainability of natural resources and reduce pressure on the forests.

Support to Fire Service Groups in High Risk Areas, to reduce the incidence of uncontrolled fires which pose a threat to critical forest and savannah ecosystems by focussing on fire management and prevention.

Biotechnology and Forest Regeneration Studies to be carried out on a sustained basis by IRNR, involving an internship programme for students and National Service personnel.

Forest Protection Operational Guidelines, to include research for implementing the forest protection strategy (environment, biodiversity, etc.) as an integral component of reserve management plans.

Programmes 1 & 2

Forest Management in the Transitional Zone A study has been conducted by the Japanese International Cooperation Agency into the possible scope of activities and is expected to lead to preparation of project document for conservation and development in forest reserves located in the Transitional Zone.

Programme 2

Pilot Forest Plantations Development Study to determine a suitable mix of incentives, design of a range of participatory schemes and actual implementation on a trial basis. FAO has been approached with regard to a technical cooperation project to establish the basis for the project.

Commercial Forest Plantations Development Project comprising (i) a core activity of planting targets to be implemented by government, and (ii) an extension/outreach component offering a wide range of options to attract private involvement.

National Tree Seed Centre In view of the considerable investment being encouraged in tree planting and growing, FORIG has proposed the establishment of a national forest tree seed centre to ensure reliable supplies of genetically improved forest tree seed which would satisfy the present and growing demand occasioned by intensification of afforestation, reforestation and community forestry programmes throughout the country. The project would contribute enormously to streamlining the potential problems of seed quality and provenance adaptability which have so far been over-looked. Unfortunately, as tree planting and growing expands under the new forestry awareness programme, various defects in earlier plantings due to the use of sub-standard seed and seedlings are likely to surface. The proposal envisages staff and facilities to cost US\$228,000 over an initial 3-year period and subsequently self-financed from the sale of superior seed to various programmes.

Reforestation of Abandoned Cocoa Farms So far little attention has been given to the situation of cocoa farmers whose holdings have diminished in site productivity and now yield marginal returns. Many of these farms were originally forested and could possibly be reforested for commercial timber production. Contact should be made with the well organized cocoa extension service to examine the feasibility of converting marginal and abandoned cocoa farms into viable plantation forests.

Programme 3

Assistance to Timber Trade Associations, to strengthen capability, particularly in monitoring and analysis of trade trends, providing technical skills and business-management support to members.

Establishment of Reduced Impact Logging practices in Ghana, this would include research into best practice, the provision of a RIL training facility for the logging industry and the institution of environmental monitoring by the FS.

Programme 4

Baseline Survey of Wildlife Resources and Utilization to be carried out on a sustained basis by IRNR, involving an internship programme for students and National Service personnel.

PART V. MONITORING AND EVALUATION

5.1 The Ministry of Lands and Forestry will be responsible for proper coordination of all programmes, projects and activities under the Master Plan and will monitor implementation through regular reporting by sector agencies. Each agency will supervise its own work plan, monitor performance, whether by project inputs and outputs or policy measures, and will report on progress and problems at bi-monthly Project Coordination Committee (PCC) meetings chaired by the Technical Director of MLF. The regular reports will be analysed and consolidated by the Policy Planning Monitoring and Evaluation Division (PPMED) of MLF, as a routine function in preparation for annual evaluations and adjustments. The Logical Framework presented in Annex 1 will be used as the main monitoring tool of the Ministry.

Coordination of technical assistance

5.2 In the past, donor assistance was largely obtained through projects prepared by teams of international consultants who were somewhat isolated from the staff of the implementing agencies. Over the years, in executing the FRMP every effort has been made to bring Ghanaian personnel into closer contact with the technical cooperation inputs, both to transfer local knowledge and experience, as well as to benefit from the discipline and skills of the experts. This has gone a far way to improve performance capacity and has been adopted as the desired approach. The policy therefore is to ensure that local personnel take an active part in the design and formulation of project assistance. However, it is recognized that each donor agency has a different set of requirements and that it will always be desirable that the donors provide whatever expertise is necessary to ensure successful project preparation and appraisal. MLF will facilitate this process and steer the proposals to the International Economic Relations Division (IERD) of the Ministry of Finance. Subsequently, when such proposals are approved, MLF will then coordinate project implementation by means of the PCC meetings and the regular reporting system of implementing agencies as mentioned above. As the PCC was evolved from the FRMP's Project Implementation Committee, it now comprises project managers of the major sectoral projects (FORUM, FSDP), as well as representatives of donor and aid agencies (IDA, ODA, FAO), related Ministries (Finance) and the forest sector institutions. Where desirable, arrangements will be made to include representatives of other Ministries, non-governmental organizations and the trade associations. In the meantime, the PCC has decided to maintain a standing Technical Committee to deal with emerging issues (e.g. forestry research, savannah woodlands management, etc.) and may initiate other working groups for specific purposes, including project formulation and coordination of technical assistance.

PART VI CONCLUSION

6.1 Apart from the problems of fuelwood and non-timber products and conservation of wildlife and related habitats, there is obviously a chronic supply shortage of timber which will shortly attain crisis levels unless free market forces are allowed to regulate prices and streamline demand and processing efficiency. Therefore, forest fees (concession rents and timber royalties) need urgent review and the industry needs immediate restructuring to ensure that the right balance can be maintained between economic timber utilisation and a sustainable rate of harvesting. In the short-term, the Government has no alternative but to remove all exit constraints for inefficient mills, encourage the industry to adjust processing capacity to fit the safe limits of local raw material availability and examine the possibility for timber imports from neighbouring states. Surviving mills would then need to ensure that such raw material inputs are fully utilized. At the same time, the country must seize the opportunity to commence substantial investment in commercial plantations so as to produce assured raw material supplies if the industry and related jobs are to be sustained in the long run.

6.2 The Forestry Development Master Plan has provided a broad framework for planning and implementing a series of long-term changes if policy objectives and strategies are to be met. At the top of the list is the need to restrict harvesting of no more than 1 million m³ of timber per year, otherwise the resource base will be eroded, the industry will collapse and the environment will be severely damaged. This requires that the FD be strengthened to uphold all forest regulations with the support of the community, otherwise illegal operations will continue unabated to lay waste the country's resources. At the same time, there is need for introduction of sound management of savannah woodlands through an approach that considers plant and animal interactions.

6.3 With regard to the timber industry, there is an urgent need to curtail log exports by free market forces and fiscal policies, otherwise the country cannot maximise value-added benefits nor improve the sector's contribution to socio-economic growth. Hence, timber royalty rates must be increased in line with the economic value of wood products, otherwise forest management services cannot be properly maintained, landowners will not benefit appropriately, the industry will not improve its efficiency. The timber industry must reduce its over-capacity, improve its efficiency and maximise its use of available raw materials, otherwise it cannot be sustained from existing local resources. The consequence would be that it would lose its present foreign markets and its socio-economic importance to the nation would diminish. This includes a need to discourage installation of new sawmills which add to the aggravated competition for scarce timber, otherwise demand pressures will continue to threaten sustainability of the forests.

6.4 Faced with a depleting resource base, the country must mobilise a multi-purpose tree growing programme to expand forest resources and tree cover, otherwise future supplies of raw materials for domestic and industrial purposes cannot be assured. From a socio-economic viewpoint, there is need for growth in utilization of woodfuel and non-timber products on a planned basis, otherwise the opportunity may be lost for achieving sustainable rural development and maintaining a viable increase in living standards. Significant in this respect is the need for consultation in policy formulation through collaborative forest management in the high forest zone. This will facilitate creation of an enabling environment for local level participation, development of adequate financial and technical support and provision of an information base to enable policy decision-making, monitoring, evaluation and environmental audit. In a similar manner, wildlife and biodiversity conservation should be pursued, supported with adequate institutional strengthening and the fullest participation of neighbouring communities, otherwise conservation education will fail to make a lasting impact on the Ghanaian society, leaving delicate ecosystems vulnerable to continued encroachment and degradation.

LOGICAL FRAMEWORK
GHANA: FORESTRY DEVELOPMENT MASTER PLAN 1996 - 2020

Narrative Summary	Measurable Indicators	Means of Verification	Important Assumptions
GOAL: Conservation and sustainable development of forest and wildlife resources <u>attained</u>	1. Encroachment and degradation minimized 2. Forest-based production stabilized 3. Plantation outputs maximized 4. Significant benefits to landowners enhanced	1.1 Forest inventories and environmental audits 1.2 National statistics 1.3 Annual Reports	1.1 Consistent political commitment 1.2 Public cooperation and willingness 1.3 Continued support from international donors
PURPOSE: 1. Sound basis for attainment and maintenance of sustainable forest management, forest industry development and conservation of forest and wildlife resources <u>provided</u> .	1.1 Forest and protected areas management plans installed and enforced 1.2 Timber harvest controlled within AAC limits 1.3 Enabling environment for individual and community collaboration created 2.1 Timber industry conversion rates increased to 80% and value-added yields increased to 50% of production 2.2 Output of wildlife and non-timber based products increased by 20% 3.1 Timber theft and game poaching minimized 4.1 Technological data made accessible 5.1 Institutions effective, skills and motivation increased 5.2 Forest and wildlife policies and laws updated	1.1 LMC Analysis Reports 2.1 TIDB Reports 3.1 FS and WD Reports 4.1 FORIG Reports 5.1 MLF Reports 5.2 Gazette notices	1.1 Timber concessions re-allocated to capable operators 1.2 Wood industry responsive to fiscal incentives
OUTPUTS: 1. Forest and wildlife estate sustainably <u>managed and enhanced</u> 2. Viable and efficient forest-based industries <u>promoted</u> 3. Public awareness and involvement in forestry and wildlife conservation <u>promoted</u> 4. Relevant research and technology	1.1 Resource management systems developed and installed by 2000 1.2 Approved land use allocation by 2000 1.3 Plantation acreage increased to 10% of permanent forest estate area by 2020 1.4 National Parks System infrastructure developed by 1998 1.5 Wildlife production increased 20% by 2020 2.1 Sawmill capacity reduced 50% and value-added output increased 10% by 2000 2.2 Kiln-drying increased to 75% of total lumber production and tertiary wood processing capacity increased 50% by	1.1 FS, WD Reports 1.2 MLF Publication 1.3 Forest Inventory 1.4 WD Reports 1.5 WD, environmental audit reports 2.1 TIDB Reports 2.2 TIDB Reports	1.1 Institutional reforms 1.2 Intersectoral cooperation 1.3 Tree tenure & ownership guaranteed to farmers &

e f f e c t e d

<p>development <u>promoted</u></p> <p>5. Effective capability at national, regional and district levels <u>developed</u></p>	<p>2015</p> <p>2.3 Teak poles exports replaced by value-added processing by 2000</p> <p>3.1 Public education programme in all districts by 2010</p> <p>3.2 All forest districts involved in collaborative management by 2020</p> <p>4.1 Studies geared to resource and industry problems completed by 2010</p> <p>5.1 FS, TIDB reforms installed by 1998</p> <p>5.2 WITC and wood village training fully operational by 2000</p> <p>5.3 Forest and wildlife legislation and regulations in place by 1998</p>	<p>2.3 TIDB Reports</p> <p>3.1 MLF Reports</p> <p>3.2 FS, WD Reports</p> <p>4.1 FORIG Reports</p> <p>5.1 MLF Reports</p> <p>5.2 TIDB Reports</p> <p>5.3 Gazette notices</p>	<p>growers</p> <p>2.1 Liquidation of non-viable mills accepted</p> <p>2.2 Export levies effectively applied</p> <p>2.3 Investors responsive to incentives</p> <p>3.1 GOG funding assured</p> <p>3.2 Community support</p> <p>4.1 Private sector cooperation obtained</p>
<p>ACTIVITIES (DEVELOPMENT PROGRAMMES):</p> <p><u>Phase I: 1996-2000</u></p> <p>1. Sustainable Forest and Savannah Management</p> <p>2. Expansion and Diversification of Forest-based Products</p> <p>3. Forest Industry Rationalization</p> <p>4. Wildlife and Protected Areas Conservation</p> <p><u>Phase II: 2001-2010</u></p> <p>1. Forest Estate Management</p>	<p>INPUTS: (Public Investment Programme/existing & emerging pipeline projects)</p> <p>1. FRMP, FWRMP, FORUM, FSDP</p> <p>2. SIPP, PFPDS, WRDP/Seed Bank</p> <p>3. FRMP, FWRMP, WSDP</p> <p>4. FRMP, FWRMP, PAMWCP, PADP, LVMP, GERM/CWMP</p> <p>[To be determined]</p>	<p>BUDGET: (INDICATIVE ESTIMATES)</p> <p>¢21,754 million</p> <p>¢17,820 million</p> <p>¢7,920 million</p> <p>¢9,600 million</p>	

<ul style="list-style-type: none"> 2. Forest Plantations Development 3. Non-timber Products Propagation 4. Forest Industry Consolidation 5. Wildlife Estate Management 	<p>[To be determined]</p>		
<p><u>Phase III: 2011-2020</u></p> <ul style="list-style-type: none"> 1. Forest and Wildlife Estate Management 2. Forest-based Industries Support 			

ANNEX 2

SUMMARY OF PROGRAMMES & PROJECTS

PROGRAMME	EXISTING PROJECTS	PIPELINE PROJECTS	PROPOSED PROJECTS	REMARKS/ACTION
<p>Programme 1: <u>Sustainable Forest and Savannah Management</u>, emphasizing consolidation of forest management systems and including development of savannah woodland management</p>	<ul style="list-style-type: none"> * FRMP - institutional, infrastructural with IDA, DANIDA * FSDP - institutional transformation with ODA * FORUM - forest protection, planting in Volta Region with communities with GTZ * Joint Forest Management - private sector and traditional community with DANIDA 	<ul style="list-style-type: none"> * FWRMP - MLF, FC, FS institutional strengthening and support * Tropical Rainforest Conservation Project - environmental 	<ul style="list-style-type: none"> * Forest Livelihood for Rural Dwellers - poverty alleviation, forest rehabilitation * Support to Fire Service Groups in High Risk Areas - fire protection & suppression * Biotechnology and Forest Regeneration Studies - institutional, practical training * Forest Protection Operational Guidelines - systems * Conservation and Management of Mangrove Ecosystems - environmental * Development of Biodiversity Strategy for Tropical High Forests - environmental * Improvement of the Selection System as Practised in West Africa - systems * Assistance with Public Education - educational 	<p>EU interested in Western Region; opportunities in other Regions BADEA contacted; to develop prodoc</p> <p>to develop methodology</p> <p>to develop prodoc</p> <p>to develop prodoc</p> <p>" " "</p> <p>" " "</p> <p>Green Forum</p>
<p>Programme 2: <u>Expansion and Diversification of Forest-based Products</u>, emphasizing development and launching of flexible investment schemes</p>	<ul style="list-style-type: none"> * Subri Industrial Plantations - pulpwood plantations with AfDB * Tree Planting with Evergreen Club - NGO planting w. ITTO * 31st December Women's Movement - women's tree nurseries w. ITTO * Provenance and Pest Study of Iroko - FORIG's species trials (Odum) w. ITTO 	<ul style="list-style-type: none"> * Western Region Development Project - FORIG regional/thf seed bank/nursery * Pilot Forest Plantation Development Study - likely options for private sector involvement * NTSC - FORIG's national tree seed centre 	<ul style="list-style-type: none"> * Commercial Forest Plantation Development - forest plantations scheme * Reforestation of Abandoned Cocoa Farms - reforestation of cocoa farms * Cane Rattan Bamboo Production Project - farm production and processing * Institutional Strengthening 	<p>JICA interested in Transition Zone; donors needed for other regions (GTZ, BADEA) Contact COCOBOD re interest</p> <p>BADEA contacted; to develop prodoc</p> <p>FWRMP component</p>

<p>Programme 3: <u>Forest Industry Rationalization</u>, emphasizing maintenance of an enabling climate for efficient utilization and increased value-added processing</p>	<ul style="list-style-type: none"> * FRMP - technical support, infrastructure w. IDA * Study on Utilization and Marketing of Some Lesser Used Species - research and development w. FORIG/ITTO 	<ul style="list-style-type: none"> * FWRMP - TEDB/FPIB institutional review and private sector support * Integrated Development of the Wood Industry Sector - umbrella proposal for coordinated technical assistance inputs * Woodworking Sector Development Project - equipment, skills and subsidies for increased LUS processing/marketing 	<ul style="list-style-type: none"> * Assistance to Wood Industry Training Centre - industrial skills * Establishment of Woodworkers and Craftsmanship Village - communal facilities, skills and products * Assistance to Timber Trade Associations - management, skills and data capacity building * Reduced Impact Logging Practices - logging studies and training 	<p>EU</p> <p>Existing TEDB/FAWAG initiative, needs donor support (UNIDO, Dutch, BADEA)</p> <p>FWRMP component</p> <p>FWRMP component</p>
<p>Programme 4: <u>Wildlife and Protected Areas Conservation</u>, emphasizing implementation of Protected Areas System Plan</p>	<ul style="list-style-type: none"> * FRMP - institutional, management planning, infrastructure w. IDA * Protected Area Management and Wildlife Conservation Project - management planning w. IUCN * Protected Areas Development Project - 2 protected areas in Western Region w. EU * Lower Volta Mangrove Project - community environmental w. ODA * Coastal Wetlands Management Project - environmental w. GEF u. GERM 	<ul style="list-style-type: none"> * FWRMP - WD institutional strengthening 	<ul style="list-style-type: none"> * Baseline Survey of Wildlife Resources and Utilization - continuous inventory of wildlife resources, capacity building 	<p>FWRMP component</p>

PROGRAMME 1 SUSTAINABLE FOREST MANAGEMENT**PROJECT 1.1****Project Title:** Forest-Based Livelihoods Pilot Project**Duration:** Five Years**Location:** Western Region {Wassa Amenfi, Wassa West and Nzema East)**Target Beneficiaries:** Rural Dwellers adjacent to encroached forest reserves**Immediate Objectives:**

1. To identify and increase forest-based livelihood opportunities.
2. To secure and protect resource base for forest-based livelihood opportunities.
3. To develop and promote technologies for forest-based livelihood opportunities.

Activities

1. Identify and assess markets for NTFPs, potentials for ecotourism, and small scale timber processing.
2. Introduce farming practices incorporating forest resources cultivation.
3. Introduce forest Reserve management for NTFPs.
4. Develop restoration ecology techniques for the rehabilitation of degraded forest resources.
5. Develop and publicize NTFP propagation technology.
6. Promote NTFP-based livelihood and timber processing activities.
7. Prepare prospectus for ecotourism investors.
8. Develop and publicize techniques to cultivate indigenous timber species.

Outputs:

1. Inventory of forest-based livelihood opportunities and potential ecotourism areas undertaken.
2. Forest-based livelihood potentials assessed and developed.
3. Farming practices diversified.
4. Management plans for forest-based livelihoods produced.
5. Cultivation of NTFPs and indigenous timber species increased.
6. Income of rural dwellers increased.

Inputs:

30 man-month Technical Assistance consultancy, Training, Nursery equipment, Communication equipment, Vehicles.

National Implementing Agency: Forest Service, in collaboration with MOFA Extension

Services

Linkages with other Projects:

The project is linked to the Forest Resource Management Project, Forest Sector Development Project.

Project Budget:

Foreign cost	US \$1,800,000
Local Cost	US \$500,000
Total Cost	US \$2,300,000

PROJECT 1.2

Project Title: Support to Fire Service Groups in High Risk Areas

Duration: Four Years

Location: Forest areas in the Transitional Zone (mainly Brong Ahafo Region)

Target Beneficiaries: Rural Communities

Immediate Objectives:

To develop skills in fire management and prevention and reduce the high incidence of uncontrolled wild forest/bush fires which threaten forest regeneration.

Activities

1. Procure firefighting equipment and materials.
2. Promote the formation and train firefighting groups.
3. Promote the cultivation of fire resistant trees.
4. Increase public awareness.

Outputs

1. Firefighting equipment and materials procured.
2. Efficient and well trained fire prevention groups.
3. New skills in fire fighting developed.
4. Increased public awareness.

Inputs:

Firefighting Equipment, 30 man-months consultancy, vehicles and Public address system.

National Lead Implementing Agency:

Forest Service/Ministry of Lands and Forestry/District Assemblies/Fire Service

Project Budget:

Foreign cost	US \$1,700,000
Local cost	US \$700,000
Total cost	US \$2,400,000

PROJECT 1.3

Project Title: Centre for Biotechnology and Forest Regeneration Studies.

Duration: Six years

Location: Institute of Renewable Natural Resources, University of Science and Technology, Kumasi

Target Beneficiaries: Public and Private institutions and individuals involved in plantation development

Immediate Objectives:

1. To increase skills and facilities in Ghana for the application of biotechnology to genetic improvement and establishment of planted forests in Ghana.
2. To develop facilities for the study of techniques for natural regeneration of tropical forests based on an understanding of the responses of the forest to manipulation.

Activities:

1. Research and develop the application of tissue culture and other techniques to forest regeneration.
2. Develop the capabilities of in-country training institutions to keep abreast with modern technology in the application of biotechnology for forest regeneration.
3. Continue studies to understand the response of the Ghanaian tropical high forest to canopy openings.

Outputs:

1. Centre for forest regeneration established.
2. Equipment for biotechnology studies into forest regeneration procured.
3. Expertise in biotechnology in forests regeneration developed.
4. Research into forest regeneration undertaken.
5. Species based in plantation forestry expanded.

Inputs:

Civil works, Vehicles, Technical Assistance, Operational Cost, Biotechnology laboratory equipment, 30 man-month consultancy

National Lead implementing Agency: Institute of Renewable Natural Resources.

Linkages with other projects:

The project is linked to studies to understand the responses of the Ghanaian tropical high forest to canopy openings currently being undertaken at FORIG and IRNR.

Project Budget:

Foreign cost US \$2,390,000

Local Cost	US \$510,000
Total Cost	US \$2,900,000

PROJECT 2.1

Project Title: Cane, Rattan and Bamboo Pilot Project

Location: Greater Accra and Eastern Regions

Target Beneficiaries: Rural Dwellers

Immediate Objectives:

To develop income generating small-scale cane, rattan and bamboo processing industry based on establishing cultivated farms.

Activities:

- Literature review and survey of existing resource sites.
- Establish demonstration nurseries and farms for bamboo, cane and rattan.
- Procure processing equipment.
- Support outgrowers with seedlings and cuttings.
- Training in rattan, cane and bamboo farming, processing and equipment technology.
- Explore local and foreign markets.

Outputs:

- Resources survey report and relevant maps.
- Demonstration farms and nurseries established.
- Facilities and equipment set up.
- Bamboo, cane and rattan cultivated by outgrowers.
- Expanded and improved rattan, cane and bamboo processing industry.
- Establishment of sustained production system.
- New skills acquired in bamboo, cane and rattan farming and processing.
- Increased income for rural dwellers.

Inputs

Processing equipment and accessories, nursery equipment, civil works, 18man-month consultancy, land, vehicles and planting materials

National Lead Implementing Agency: Ministry of Lands and Forestry and Ministry of Food and Agriculture

Linkages with other Projects:

National Board for Small Scale Industry cane processing project

Project Budget:

US \$2,300,000

PROJECT 2.2

Project Title: Reforestation of Abandoned Cocoa Farms in Forest Reserves Project

Duration: Three years

Location: Forest Reserves

Target Beneficiaries Rural Dwellers

Immediate Objectives

To identify and reforest all abandoned cocoa farms in forest reserves.

Activities

1. Identify abandoned cocoa farms in forest reserves.
2. Demarcation of sites.
3. Update land capability data, critical sites and rural sociology
4. Establish nurseries for commercial timber species.

Outputs

1. Abandoned cocoa farms well demarcated and reforested.
2. Optimal land use plan.
3. Nurseries established.

Inputs

Nursery Equipment, planting materials, vehicles, survey instruments, maps.

National Lead Implementing Agency: Forest Service, in collaboration with COCOBOB, MOFA Extension Service

Linkages with other projects

The Project is linked to the proposed Forest-based Livelihoods Project, Commercial Forest Plantation Project

Project Budget

Foreign cost	US \$1,500,000
Local Cost	US \$500,000
Total Cost	US \$2,000,000

PROJECT 2.3

- Project Title:** Pilot Commercial Forest Plantation Development
- Duration:** 5 years
- Location:** Degraded/understocked Forest Reserves in the High Forest and Transition Zones and off-reserves in the High Forest Zone.
- Target Beneficiaries:** Concessionaires, tree growers, farmers and cultivators, timber millers, forest communities, individuals and companies.

Immediate Objectives:

Initiation of a pilot commercial forestry development scheme which would establish 5000 hectares of forest plantations using fast growing indigenous and exotic species for sawtimber production. The established plantations would be divested to the target beneficiaries and the proceeds used in a rolling fund to extend investment in additional plantations. Based on the success of the scheme, the fund would also be used to finance out-growers on a soft loan basis. Actual plantation operations would be contracted to forestry firms with proven capability, and the project would be managed by a Ghanaian project management company under contract to the Ministry of Lands and Forestry.

Activities:

- | | | |
|---------------------|----|---------------------------------------------------------------------------------------------------------|
| MLF/FS | 1. | Identify and demarcate suitable plantation sites |
| | 2. | Finalize long leases with land-owning stools, on the basis of Land Rent formula |
| | 3. | Appoint project managers |
| | 4. | Implement public relations |
| | 5. | Monitor project progress |
| Project managers | 1. | Select forestry contractor(s) |
| | 2. | Manage project budget |
| | 3. | Establish Plantation Fund |
| | 4. | Invite outgrowers participation |
| | 3. | Supervise contractor(s) and evaluate performance |
| | 6. | Determine options for further expansion of scheme |
| Forestry contractor | 1. | Plan and implement site infrastructure |
| | 2. | Plan and produce planting materials |
| | 3. | Carry out plantation establishment: Yr1 - 100ha, Yr2 - 400ha, Yr3 - 1000ha, Yr4 - 1500ha, Yr5 - 2000 ha |
| | 4. | Total cost of US\$1200/ha to include maintenance and protection |

Outputs:

5000 hectares of commercial forest plantations established
Timber production of 400m³/ha at age 20
Stumpage value of US\$8000/m³ at age 20
Long-term commercial forestry financing scheme established
Technical and project management capability established

Inputs:

Land Rent at US\$7.50/yr, i.e. 2% of stumpage value	US\$75,750
Project management fees at US\$100,000/yr	US\$500,000
Forestry contractor(s) fees at 10% of establishment costs	US\$600,000
FS/MLF operational expenses at say US\$10,000/yr	US\$50,000
Planting/nursery materials & equipment, 10% of establishment costs	US\$600,000
Plantation development expenses at 80% of establishment costs	US\$4,800,000
MLF publicity and public relations	US\$100,000
TOTAL	<u>US\$6,725,750</u>

National Lead Implementing Agency:

Forest Service, Ministry of Lands and Forestry, Ghana.

Linkages with other Projects:

Under the Programme for Expansion and Diversification of Forest-based Products, the project will be linked to the National Tree Seed Centre, FORIG, for the supply of quality seeds.

PROJECT 2.4

Project Title:	National Tree Seed Centre
Duration:	3 years
Location:	Kumasi
Target Beneficiaries:	Tree Growers, Farmers, Communities and Commercial Plantation Developers

Immediate Objectives:

To ensure reliable supplies of genetically improved forest tree seed which would satisfy the present and growing demand occasioned by intensified afforestation, reforestation and community forestry programmes throughout the country.

Activities:

- preparation of site
- seed collection and preparation
- procurement of research equipment
- staff training

Outputs:

- a well-resourced genetically improved seed centre established
- genetically improved seed supplied regularly to prospective investors at affordable prices
- defects in planting due to substandard seed and seedlings corrected
- planting of indigenous trees increased

Inputs:

- research equipment

- planting equipment
- vehicles for monitoring
- 12-man-month consultancy

National Lead Implementing Agency: Forestry Research Institute of Ghana.

Linkages with other Projects:

The project is linked to the national commercial forest plantation project.

Project Budget:

Foreign Cost	US \$230,000
Local Costs	US \$80,000
TOTAL	US \$310,000

PROJECT 3.1

Project Title: Establishment of a Woodworkers and Craftsmanship Village

Duration: 5 years

Location: Nkinkasie (near Kumasi)

Target Beneficiaries: Wood working and furniture producers in Ashanti

Immediate Objectives:

To relocate, in a central facility, the scattered small-scale furniture producers and other woodworkers in and around Kumasi so as to improve their production efficiency and income generation capability and enable them become viable suppliers of quality furniture parts and components to both the local and export markets.

Activities:

- Conduct feasibility studies of products and production;
- Construct social and technical infrastructure for the village;
- Construct sheds, workshops, training and administrative offices;
- Provide common service facilities and related machines and equipment;
- Conduct training courses in the use of tools and manufacture of quality products;
- Provide support systems for production design, quality control and delivery of products;
- Mount a local and international marketing campaign for the products of the village.

Outputs:

- Technical infrastructural services for the wood village provided;
- Production facilities and level of woodworking skills increased;
- Marketing support for wood products provided;
- Furniture production support systems organized;
- Export of value-added wood products increased;
- Utilization of sawmill off-cuts maximized;
- Basis for similar villages in Takarodi and Accra established.

InputsCost (US \$)

Civil Works - construction of buildings and installation of utilities	3,100,000
Technical Assistance - feasibility studies, design of building and drainage	1,250,000
Equipment and machines	250,000
Vehicles	570,000
Consultancies - 36 months	570,000
Operational costs	977,000
TOTAL	<u>US \$8,407,000</u>

National Lead Implementing Agency:

Furniture and Wood Products Association of Ghana, in collaboration with Timber Export Development Board

Linkages with other Projects:

The project will build on gains made in promoting greater utilization and improved marketing of Ghanaian lesser-used timber species from sustainably managed forests.