

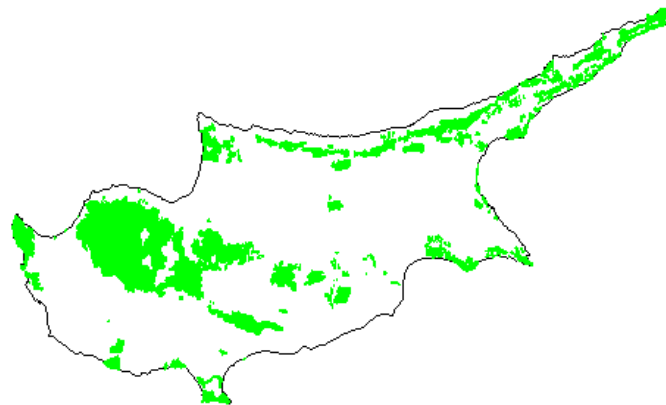
**MINISTRY OF AGRICULTURE, NATURAL
RESOURCES AND ENVIRONMENT**

FORESTRY DEPARTMENT

NATIONAL FOREST PROGRAMME OF CYPRUS

AND

NATIONAL FOREST POLICY STATEMENT



NICOSIA – CYPRUS

OCTOBER 1999

EXECUTIVE SUMMARY

NATIONAL FOREST PROGRAMME FOR CYPRUS

Preparation of this National Programme for development of the forest sector in Cyprus represents the final phase of a detailed investigation and strategic review of its forest resources and the range of activities associated with them. The task commenced in May, 1998 and lasted approximately 18 months; it was carried out by the Forestry Department, with the full support of the Ministry of Agriculture, Natural Resources and Environment. External assistance was provided by The Food & Agriculture Organization of the United Nations, under the auspices of the Mediterranean Forestry Action Plan.

The review has provided a new strategy for forest sector development in Cyprus, which is designed to protect and enhance the Island's natural environment and national heritage while also promoting recreation and tourism. The National Forest Programme (NFP) specifies, in general terms, the action that needs to be taken to implement this strategy during the next ten years. It is a flexible programme, which can evolve in response to future events and allows for uncertainty about timing and the availability of additional resources.

Social and economic conditions are changing fast in Cyprus. External events affect the way of life of the country's citizens, its institutions and its natural resources. Influences from abroad are expected to intensify due to the prospect of joining the European Union, which opens wider vistas and imposes obligations on member states.

The forests of Cyprus are an important national resource and the forest sector is subject to pressures coming from many directions to which it has to respond. Forests provide timber and non-wood products; more importantly they contribute significantly to the beauty of the landscape, preservation of the national heritage, protection of water supplies, rural life, village communities and the general wellbeing of Cypriot citizens; they attract visitors from abroad on whom the national economy is heavily dependent. The future prosperity of the country is bound up with its forests and what happens to them. With effective conservation and sound management the forest resource offers multidimensional opportunities for socioeconomic development, especially in rural areas.

During the review, a partial cost-benefit analysis was attempted for the State forests and a SWOT analysis was used to examine the strengths, weaknesses, opportunities and threats in the forest sector. The social benefits attributable to recreation and tourism, water production from boreholes/springs and improvements in agricultural yields due to soil conservation, were shown to be very large, approximately 36.7 million Cyprus pounds total per year, or an average of 303 pounds per ha / year, far outweighing the revenue from timber sales, only about 0.5 million pounds per year, or 4.1 pounds per ha / year.

Strategy preparation was based on consideration of four alternative scenarios: the first described the 'now' situation, the second was a timber production scenario. The third was focussed on protection of the environment and heritage, and the fourth on recreation and tourism. Consideration of the scenarios led to the adoption of a **Rural Betterment Strategy**, which combines features from the last two scenarios.

The strategy aims at safeguarding and expanding forest resources for the benefit of the whole community while capturing the advantages of development based on ecotourism. The strategy will be achieved by:-

- action to protect and enhance water supplies, wildlife and the national heritage in State forests,
- afforestation and the restoration of degraded land in the wider countryside,
- safeguarding as national parks and nature reserves, particular places which have outstanding scenery, cultural importance, exceptional ecological or scientific interest, and developing them for recreation and tourism where this does not conflict with conservation aims. These sites will be delineated both inside and outside the State forests,
- encouraging, guiding and controlling recreation and tourism development through Local Plans, zoning and development permits, in conformity with Town and Country Planning Regulations, on the strict proviso that State forests will on no account be used for building development,
- providing information and publicity about the forests and the flora and fauna they contain, directed particularly at schools, colleges, tourists and the general public, using up-to-date information technology and interpretation techniques.

This strategy is a broad statement of aims. It indicates the general direction to be taken, but is not a detailed 'blueprint' for future development of the forest sector. Implementation depends on converting the strategy into a costed and time-based programme, based on the five main aspects which are identified.

This strategy builds on the well-established capabilities and expertise of the Forest Department by spreading them more widely through collaboration with other ministries, departments and agencies. The Forest Department can initiate action in the State forests (which it controls), and extend its operations, by agreement with others, either acting alone or by joint ventures, to other rural areas outside the main forests. There need be no delay in beginning to implement the strategy, although the subsequent rate of progress will depend on the capacity and willingness of other organizations to cooperate. The strategy maintains continuity by linking existing multiple use policy for forests to new requirements for a broader approach, based on conservation and free trade principles.

The strategy involves reform of the forest sector's organization, structure and institutions. It must put its own house in order, to contribute more effectively to the welfare and economic development of society as a whole. With support from the Ministry of Agriculture, Natural Resource and Environment, the Forest Department can reach out, offering assistance to others where there are shared interests and starting a dialogue to resolve differences. At international level, the strategy conforms with requirements for joining the European Union and offers the prospect of obtaining financial assistance from external sources.

The NFP covers the ten year period, 2000 - 2009 and is based on the five action areas identified in the strategy. It contains seven subprogrammes, each consisting of several projects.

They deal with the following groups of activities:-

- A. Afforestation and silviculture,
- B. Production of timber and non-wood products,
- C. Protection against fires and other hazards,
- D. Conservation of ecosystems, flora, fauna and heritage,
- E. Water,
- F. Local plans and village development,
- G. Institutional reform, modernization and capacity building,

Tables provide details of the projects. The total cost over ten years, from all sources, is estimated at 10,2 million Cyprus pounds annually (or 102 million). The NFP adopts an evolutionary approach; it provides a flexible framework for continuous development. The projects have not been planned in detail, leaving this to be done by a small Project Planning Unit in the Forestry Department, which will also monitor progress.

The present Forestry Department budget is sufficient to provide about half the total costs of the NFP proposals. The incremental costs can be met from a variety of sources, including other ministries and organizations, the private sector and EU. The costs of harmonization with EU are estimated at about 0,5 million pounds plus approximately 5 million pounds to meet the provisions of international conventions and EU policy directives.

Implementation depends on joint action with other government ministries, departments and agencies, and with individuals and organizations in the private sector, NGOs etc. The Forestry Department will be the lead agency, generating momentum and providing continuity, coordination and accountability. Progress will involve consultation, conflict resolution and organizational changes.

A Mission Statement for the Forestry Department is included.

The NFP has an important international dimension. The forest sector in Cyprus generates an outward flow of benefits/contributions and, in return, receives an inward flow of investment and resources from abroad. The flows are helpful to the economy of Cyprus and the NFP seeks to increase these flows in both directions. Cyprus intends to join the European Union, which will benefit the forest sector. Cyprus has lead the way amongst countries in the Mediterranean and Near East by developing a methodology and format for NFP preparation, which may serve as a model for other countries to follow.

EXECUTIVE SUMMARY

NATIONAL FOREST POLICY STATEMENT FOR CYPRUS

The new National Forest Policy Statement replaces the previous official policy statement, which was issued in 1950 and reconfirmed after Independence in 1960. It is based on a strategic review of the forest sector, followed by preparation of a National Forest Programme in 1999. The new policy is in a different format which relates the aims of the strategy to the action required to achieve those aims.

The new strategy, known as the Rural Betterment Strategy, seeks to protect and improve the natural environment of Cyprus for the benefit of all citizens and the enjoyment of visitors from abroad. The strategy is based on the multiple use of forest resources. It is directed at improving the condition of the forests, conservation of soils and watersheds, protection of the flora, fauna, biodiversity and heritage sites, the promotion of ecotourism, and the sustainable production of wood and non-wood products, up to the limits of the capacity of the forests to supply them. The strategy is designed to meet society's changing needs and the expectation that Cyprus will join the European Union.

The Forest Policy Statement sets out the strategy and provides guidance for its implementation by means of the National Forest Programme (NFP). It includes the general conditions (*imperatives*) that must be observed and the detailed *policy objectives* that will be followed when implementing the NFP. It identifies the *constraints* or impediments to development that must be overcome, the *criteria* by which success will be judged, and the *indicators* used to measure progress.

The strategy aims at the betterment of rural areas through forestry action:-

- better conservation of natural resources,
- better facilities for visitors,
- better forest villages,
- better rural environment.

Three overriding general conditions apply to this strategy and the NFP. All forest sector activities should be *holistic*, *sustainable*, and *equitable*.

The strategy will be implemented by means of the NFP which covers the ten-year period, 2000 — 2009. The NFP is based on five *action areas*, which are identified in the strategy, and contains seven subprogrammes, covering the groups of associated activities on which action needs to be concentrated. The Policy Statement includes detailed policy objectives for each subprogramme.

Implementation will be restricted by the availability of resources, the capacity of organizations in the forest sector to expand their activities or take on new responsibilities, and by institutional rigidities which prevent change. Specific proposals to overcome these difficulties are included in the NFP. Collaboration between the Forestry Department and other organizations will be essential for success.

CONTENTS

	<u>Pages</u>
Executive Summary	
National Forest Programme	i-iii
National Forest Policy Statement	iv
Contents	v-vi
Acronyms	vii
NATIONAL FOREST PROGRAMME FOR CYPRUS	
1. Introduction	1
1.1 Background	1
1.2 Context	1
1.3 Multiple use and sustainable development	3
1.4 The strategy process	3
2. Strategy	5
2.1 The strategic review	5
2.2 The Rural Betterment Strategy	6
2.3 Five action areas	8
2.4 Strategic guidelines and policy	9
3. The National Forest Programme	10
3.1 The time frame	10
3.2 Action areas and activities	10
3.3 Contents of the subprogrammes	10
3.4 Costs and timing	32
3.5 Benefits	32
3.6 Incremental costs and cost of harmonization with EU	33
3.7 Resource mobilization, deployment, financing and investment ..	34
3.8 Programme evolution and project preparation	35
3.9 Monitoring, evaluation and review	36
3.10 Capacity	36
3.11 Sustainability	36
4. Participation, cooperation and coordination	38
4.1 Sector responsibilities and sectional interests	38
4.2 The Forestry Department's Mission	38
4.3 Participation in the subprogrammes and projects	39
4.4 Steering the subprogrammes	39
4.5 Consultation	39
4.6 Harmonization of laws, regulations and administrative procedures ..	40
4.7 Conflict resolution	40
4.8 Organizational change	41
5. The international dimension	42
5.1 The two-way flow	42
5.2 Membership of the European Union	42
5.3 The role of Cyprus in Mediterranean forestry	43

NATIONAL FOREST POLICY STATEMENT

1. Preamble	44
2. Strategic aims	44
3. The Rural Betterment Strategy	45
4. Imperatives	45
5. Implementation	46
6. Policy objectives	46
7. Constraints	49
8. Criteria and Indicators	49

Supporting documents on which the NFP and Policy Statement are based

Report of the National Consultant on Forest Practice

Report of the National Consultant on Forest Institutions

Report of the National Consultant on Economics

Report of the Consultant on Forest Productivity

Report of the Consultant on Education

Strategy for Forest Sector Development in Cyprus

ACRONYMS

MANRE	:	Ministry of Agriculture, Natural Resources and Environment
FD	:	Department of Forests
ES	:	Environmental Service
AD	:	Agricultural Department
WDD	:	Water Development Department
GSD	:	Geological Survey Department
ARI	:	Agricultural Research Institute
MS	:	Meteorological Service
MI	:	Ministry of Interior
TPHD	:	Town Planning and Housing Department
DO	:	District Officers
LSD	:	Land and Survey Department
GF	:	Game Fund
LA	:	Local Authorities
MJPO	:	Ministry of Justice and Public Order
FS	:	Fire Service
P	:	Police
MD	:	Ministry of Defense
NG	:	National Guard
MCIT	:	Ministry of Commerce, Industry and Tourism
CTO	:	Cyprus Tourism Organisation
CFI	:	Cyprus Forest Industries Ltd.
MEC	:	Ministry of Education and Culture
MCD	:	Ministry of Communications and Work
PWD	:	Public Works Department
PO	:	Private Owners
NGOs	:	Non Governmental Organizations
Action Areas		
I	:	State forest and surrounding areas
II	:	Wider countryside
III	:	Special sites
IV	:	Eco-tourism promotion
V	:	Information, publicity and education

Currency : One Cyprus Pound (CY£) = US\$ 2.0

NATIONAL FOREST PROGRAMME FOR CYPRUS

1. INTRODUCTION

1.1 Background

The preparation of this National Programme for development of the forest sector in Cyprus represents the final phase of a detailed investigation and strategic review of its forest resources and the range of activities associated with them. The task commenced in May, 1998 and lasted approximately 18 months; it was carried out by the Forestry Department, with the full support of the Ministry of Agriculture, Natural Resources and Environment. External assistance was provided by The Food & Agriculture Organization of the United Nations, under the auspices of the Mediterranean Forestry Action Plan.

The team undertaking the work consisted of three National Consultants, led by the National Coordinator, Mr. Al. Christodoulou, Chief Conservator of Forests, assisted by an International Consultant, Dr. M. Gane. Each National Consultant was responsible for reviewing and reporting on a particular aspect of forest sector activities: Mr. E.D. Michaelides on Forest Institutions, Mr. L.I. Leontiades on Forestry Practice and Mr. G. Constantinides on Economics. Additionally, two short-term consultants, Dr. S. Gatzojannis and Mr. H. Hilmi, provided inputs dealing with forest productivity and education respectively.

The review has provided a new strategy for forest sector development in Cyprus, which is designed to protect and enhance the Island's natural environment and national heritage while also promoting recreation and tourism. The National Forest Programme specifies, in general terms, the action that needs to be taken to implement this strategy during the next ten years. It is a flexible programme, which can evolve in response to future events and allows for uncertainty about timing and the availability of additional resources.

1.2 Context

Social and economic conditions are changing fast in Cyprus. External events affect the way of life of the country's citizens, its institutions and its natural resources; they are being exposed to new situations and must adapt to meet them. Influences from abroad are expected to intensify due to the prospect of joining the European Union, which opens wider vistas and imposes obligations on member states. Changes inside and outside the country affect all sections of society and all sectors, not least the forest sector.

The forests of Cyprus are an important national resource. A wide range of activities depends on them, or is associated with them. Forests contribute significantly to the beauty of the landscape, preservation of the national heritage, protection of water supplies, rural life, village communities and the general wellbeing of Cypriot citizens; they attract visitors from abroad on whom the national economy is heavily dependent.

The future prosperity of the country is bound up with its forests and what happens to them. With effective conservation and sound management the forest resource offers multidimensional opportunities for socioeconomic development, especially in rural areas.

The forest sector is subject to pressures coming from many directions to which it has to respond. The sector must move with the times. Events outside the sector create new possibilities for betterment, but also bring dangers to be avoided. Extra demands on forest resources are continually being made, due to people who wish to profit from them in some way or to enjoy recreational experiences in a natural environment. On one hand, forest resources need to be adequately protected, on the other hand, they can be used to provide additional benefits of many kinds for the community. It is necessary to balance competing demands.

The Government of Cyprus provides an institutional framework for the forest sector, within which it can develop. This framework should enable the sector to respond to change positively and safely. The Government should facilitate, using all means at its disposal, the sustainable development of the forest sector, so that the flow of benefits derived from forest resources is not only maintained, but also continues unabated, increasing in quantity and improving in quality. Sustainable development has become an unavoidable commitment for all countries entering the European Union.

The strategic review of the forest sector was undertaken in order to address all aspects of the changing situation, which now faces the Forestry Department and the Government of Cyprus, and to enable the Department to deal effectively with the challenges which lie ahead. It is necessary to promote sustainable development in a new context. Therefore, the review and this National Forest Programme based on it, pay particular attention to:-

- ❖ the increasing importance (both nationally and internationally) attached to the social and environmental benefits that forests can generate,
- ❖ a shift away from the traditional emphasis on timber production as the main objective of forest management,
- ❖ the outstanding importance of tourism for the national economy of Cyprus (having regard also to the dangers that this can bring),
- ❖ the importance of improving the environment by 'greening' the countryside, restoring degraded land and extending afforestation in areas outside the State forests,
- ❖ the need for a broad-based, collaborative national forest programme which, although led by the Forestry Department, seeks to mobilize all sections of the community and encourage their participation, thereby increasing the effectiveness of the Government's limited budget,
- ❖ the opportunities for additional investment that are associated with broad-based, forest sector development, and the availability of external assistance, from the European Union and other sources, for projects that meet their criteria,
- ❖ the pool of expertise, experience, facilities and organizational capacity in the Forestry Department, built up over a number of years for management of the State forests, which could be applied more generally to protect, conserve and improve the environment in Cyprus,

- ❖ widespread public interest in the scenic beauty, flora, fauna and national heritage of Cyprus and support for their protection and conservation, including a willingness to pay for facilities which enable them to be enjoyed and appreciated.

1.3 Multiple use and sustainable development

Forestry in Cyprus has for many years been based on multiple use. In ancient times the forests were more extensive and the population smaller; timber was felled for building houses and ships, and the forests were a source of food, fodder and other needs. The capacity of the forest to meet peoples` requirements was not questioned and sustainability was not an issue. Timber production based on the principle of `sustained yield` was introduced by European foresters in the 19th century and has been practiced in Cyprus throughout the 20th century. In recent years the importance of forests as the source of a wide range of benefits, including biodiversity, climate amelioration, water, amenity and scenery, has been recognized and the sustainability concept has been expanded to cover them. It is now focussed on protection of forest resources, so that their capacity to continue to provide goods and services of all kinds, for future generations, is not impaired.

In Cyprus the need to manage forest resources for multiple purposes has been clearly set out, right from the first official forest policy declaration in 1950. However, the emphasis previously given in practice to timber production and meeting domestic requirements for wood products is no longer appropriate and a new balance is emerging. It is now important to reinterpret the sustainability concept to allow for a different mixture of uses, and to focus on the maintenance (and improvement) of environmental quality while meeting the recreational requirements of local people and foreign tourists.

Up to now, forest policy has tended to concentrate on forest resources rather than the forest sector. It is important to recognise the interdependence between the resources and the way they are used. An area of forest can be used to grow trees, which are harvested to supply sawmills and furniture makers; alternatively, it can be left undisturbed to protect the wildlife in it, or set aside for visitors to enjoy. The link between resources and uses can be allowed for by treating them as one unit, i.e. an approach known as *holistic*. The forest sector is the larger unit, formed by considering the forests in conjunction with all their associated activities and outputs. Development of the forest sector in Cyprus depends on using these linkages to stimulate and promote prosperity, expansion and change. The development will be sustainable provided that the benefits that accrue to the community are permanent, not temporary.

1.4 The strategy process

Forest policy has evolved in Cyprus since 1878 when the Forestry Department was established. Over the years, its aims have become wider and the balance between them has shifted. Forest sector development is taking place in a new context and a fundamental review of the situation was necessary before deciding on the best way

forward. A new strategy has been formulated, which addresses the problems and opportunities now facing the sector. This strategy provides the direction which forest sector development should follow and is explained in chapter 2.

Strategic review is the first step in an ongoing process. The strategy that is chosen should be implemented; good intentions must be converted into action to achieve the desired results. A plan of action is necessary. The National Forest Programme (NFP), which is set out in chapter 3, serves this purpose.

The NFP is intended to be flexible in order to correspond with the speed at which organizational changes take place and the rate at which resources become available. While the main components of the NFP have been identified, the details remain to be worked out. It will be necessary to prepare project proposals for each component, to describe precisely what is to be done and how their objectives are to be achieved. Annual budgets and operational details will be needed as work proceeds. It is envisaged that the NFP will evolve and be filled out as it goes along, although keeping within the overall framework laid down.

Progress will need to be monitored and reviewed at appropriate intervals. The contents of the programme can then be adjusted as necessary. The time frame for the NFP is ten years; at the end of this period it is expected that the strategy will require reassessment and revision before a new programme is drawn up to cover the following decade.

2 STRATEGY

2.1 The strategic review

The review process involved study of all aspects of the forestry situation in Cyprus by consultants, whose reports are included as supporting documents to the NFP. The conclusions drawn from their studies were presented in a separate document ("Strategy for forest sector development in Cyprus"), which set out the strategy and describes how it was formulated. Together, these documents provided the basis for programme preparation and are included as part of the NFP package.

During the review, a partial cost-benefit analysis was attempted for the State forests and a SWOT analysis was used to examine the strengths, weaknesses, opportunities and threats in the forest sector. The social benefits attributable to recreation and tourism, water production from boreholes/springs, and improvements in agricultural yields due to soil conservation, were shown to be very large (approximately 36.7 million Cyprus pounds total per year, or an average of 303 pounds per ha / year), far outweighing the revenue from timber sales (only about 0.5 million pounds per year, or 4.1 pounds per ha / year).

Strategy preparation was based on consideration of alternative scenarios. Scenarios are analytical devices used to aid strategy preparation. They describe different expectations of future events and their logical consequences so that it becomes possible to identify needs, clarify options, focus on priorities, formulate objectives and propose actions. They represent imagined future states of the forest sector and provide alternative views of what the sector might look like in future.

Four scenarios were identified, describing possible routes which forest sector development could follow. Scenario A was the baseline, representing the existing situation, from which the other scenarios start. Scenarios B, C and D represented new directions for the forest sector to take; they were based on broad social aims. All scenarios involved multiple use of the forest resources, but with different emphases. These scenarios indicated the main choices open to the Government about the kind of forest sector that is desired, and the sort of activities and contribution to the national economy that may be expected in each case. They were as follows:-

Scenario A : which described the 'now' situation, showing what is happening at present and what is expected to happen in future if things continue according to present practices and current priorities.

Scenario B : based on multiple use of forest resources focussing on *production*, primarily of timber.

Scenario C : based on multiple use of forest resources focussing on the *protection* of the environment and heritage.

Scenario D : based on multiple use of forest resources focussing on the development of *recreation and tourism*.

These scenarios helped to clarify the issues to be addressed; discussion led to the following conclusions:-

- Scenario A was not viable. Changes caused by events outside the sector, such as entry to the European Union, make it impossible to carry on indefinitely in the same way as at present.
- Scenario B was also a non-starter. The relatively low productivity and poor stocking of the forests severely restrict the potential for domestic wood (and non-wood) production. Timber for general industrial use can be imported cheaply and home-grown supplies should be directed to specialized markets with higher value.
- Scenario C was a collection of uses, many of which are unavoidable commitments; the other scenarios could not be sustained without adequate protection of existing forest resources and additional environmental conservation measures covering the whole of Cyprus.
- Scenario D was very similar to C, although it had a different emphasis. However, uncontrolled and unmanaged recreation and tourism is very dangerous and unsustainable. This was evident already at Akamas proposed National Park; visitors must not be allowed to destroy what they come to see.

It was clear that discussion about the most appropriate forest strategy for Cyprus should focus on scenarios C and D. The particular strength of the environment and heritage scenario was that it aimed at safeguarding the natural resources of Cyprus for present and future generations, and was therefore sustainable; its chief disadvantage was that it was expensive financially in spite of producing large social benefits. The recreation and tourism scenario was likely to generate incomes and bring added prosperity to society in general and village communities in particular, a share of which would be captured in taxes; however it carried significant dangers if it was not carefully planned and regulated. The strategy that emerged from the discussions combined important elements from both scenarios C and D.

2.2 The Rural Betterment Strategy

The strategy that was adopted is *a strategy for rural betterment*:-

- better conservation of natural resources,
- better facilities for visitors,
- better forest villages,
- better rural environment

This strategy builds on the well-established capabilities and expertise of the Forest Department by spreading them more widely through collaboration with other ministries, departments and agencies. The Forest Department can initiate action in the State forests (which it controls), and extend its operations, by agreement with others, either acting alone or by joint ventures, to other rural areas outside the main forests. There need be no delay in beginning to implement the strategy, although the subsequent rate of progress will depend on the capacity and willingness of other

organizations to cooperate. The strategy maintains continuity by linking existing multiple use policy for forests to new requirements for a broader approach, based on conservation and free trade principles.

The strategy involves reform of the forest sector's organization, structure and institutions. It must put its own house in order to contribute more effectively to the welfare and economic development of society as a whole. With support from the Ministry of Agriculture, Natural Resources and Environment, the Forest Department can reach out, offering assistance to others where there are shared interests and starting a dialogue to resolve differences. At international level, the strategy conforms with requirements for joining the European Union and offers the prospect of obtaining financial assistance from external sources.

A concise statement of the strategy is as follows :-

The Rural Betterment Strategy for the forest sector, to be adopted and implemented by the Government of Cyprus, aims at safeguarding forest resources for the benefit of the whole community while capturing the advantages of development based on ecotourism. The strategy will be achieved by:-

- action to protect and enhance forest cover, water supplies, wildlife and the national heritage in State forests,
- afforestation and the restoration of degraded land in the wider countryside,
- safeguarding (as national parks, nature reserves etc) particular places which have outstanding scenery, cultural importance, exceptional ecological or scientific interest, and developing them for recreation and tourism where this does not conflict with conservation aims. These special sites will be delineated both inside and outside the State forests.
- encouraging, guiding and controlling recreation and tourism development through Local Plans, zoning and development permits, in conformity with Town and Country Planning Regulations, on the strict proviso that State forests will on no account be used for building development.
- providing information and publicity about the forests and the flora and fauna they contain, directed particularly at schools, colleges, tourists and the general public, using up-to-date information technology and interpretative techniques.

This strategy is a broad statement of aims. It is important to emphasize that it indicates the general direction to be taken, but is not a detailed 'blueprint' for future development of the forest sector. Implementation depends on converting the strategy into a costed and time-based programme, based on the five main aspects which are identified.

2.3 Five action areas

The five main aspects of the strategy represent target areas on which the activities in the programme should be concentrated. They include areas distinguished by geography and areas of interest connected with particular functions. For convenience they are labelled *action areas*. They relate to (i) the state forests, (ii) the wider countryside, (iii) special sites, (iv) ecotourism promotion, and (v) information, publicity and education. The boundaries between categories are not intended to be rigid, some overlap, and some activities and projects in the programme cover more than one action area. They are as follows:-

Action area I is focussed on the State forests and land near them; it includes the main forest areas in the mountains, which also contain village communities, private land and unclaimed land that has reverted to the Government ('hali'). Protection, conservation and management of these vital forest resources is closely linked with what happens on adjacent land and in the villages.

Action area II is concerned with the need to improve and restore land outside the forests, where it is deteriorating or has become eroded or degraded, in order to protect water catchments, safeguard the flora and fauna and improve the scenery. Afforestation offers the best way of achieving this, although progress has been slow in the past, mainly for institutional reasons.

Action area III deals with particular sites, which have special significance for recreation and tourism, on account of their scenery or other special features, or contain important examples of ecosystems, rare or endangered flora and fauna, or wildlife habitat, which form part of the national heritage. Their value as national assets needs to be recognised by giving them special status in law, as national parks, nature reserves or monuments.

Action area IV concentrates on the need to stimulate, guide and regulate the provision of facilities for recreation/tourism and development in villages, so that a high quality rural environment is maintained and the national heritage is respected. Ecotourism promotion can bring substantial benefits to village communities and contribute to the general quality of life in Cyprus.

Action area V involves extending the Forestry Department's existing geographic information system (GIS) and forest inventories to cover aspects of forest management and conservation which are not related to timber production. They include the mapping of ecosystems, recording the numbers and distribution of the flora and fauna, details of 'giant' trees and other natural monuments. The eventual aim should be to develop a national environmental data base to which the Forestry Department contributes significantly. Information will then be available to support visitor centres, publications, educational projects, internet sites, research and many other purposes.

2.4 Strategic guidelines and policy

Guidelines for implementation of the strategy are necessary. This is the proper function of a forest policy, which should be a national declaration of intent, to which the Government is fully committed. The forest policy statement should provide a framework of general conditions, strategic aims, specific objectives, constraints and criteria, which need to be followed during preparation and execution of the NFP. The document should be in a form suitable for public distribution.

The existing Forest Policy does not fulfill these requirements. Therefore a new National Forest Policy Statement has been prepared in a different format, which connects the strategic aims to the means of achieving those aims.

3 THE NATIONAL FOREST PROGRAMME

3.1 The time frame

The NFP covers a ten year period, 2000-2009. At the end of this time the strategy will need to be reviewed and a new plan prepared.

National development planning in Cyprus follows a five-year cycle. A new national plan for the country is now being prepared (covering the period 1999-2003) to which the forestry sector is contributing. The duration of the NFP is ten years, equivalent to two cycles, so a mid-term review of the programme is called for to assess progress and provide an input into the national development plan covering the period 2004 to 2008.

3.2 Action areas and subprogrammes

The NFP is based on the five action areas identified by the strategy. These indicate where effort and resources need to be concentrated. However, the action areas do not adequately describe the range of activities necessary to achieve the strategic aims or identify the individual projects to be carried out during the ten-year period.

The NFP consists of a complex set of activities and related projects of various different kinds. It is divided into seven subprogrammes, which, taken together, are designed to achieve the aims of the strategy. It relates the five action areas to the seven groups of associated activities that make up the programme. The five action areas and the seven subprogrammes form a matrix, which connects the strategic aims to the means of achieving those aims. Table 1 shows this matrix. The subprogrammes are arranged horizontally and the action areas are listed vertically. The importance of each subprogramme, in relation to each action area, is indicated by the number of crosses in the table.

3.3 Contents of the subprogrammes

Each column in table 1 represents a group of related activities or set of projects, which make up a subprogramme. Details of each subprogramme are shown separately in Tables 2 to 9.

The subprogrammes deal with the following groups of activities:-

- A. Afforestation and silviculture,
- B. Production of timber and non-wood products,
- C. Protection against fires and other hazards,
- D. Conservation of ecosystems, flora, fauna and heritage,
- E. Water,
- F. Local plans and village development,
- G. Institutional reform, modernization and capacity building.

The table for each subprogramme consists of a list of projects of various kinds, with explanatory details, indicating the action areas to which each refers, the organizations involved, and their approximate costs and duration.

TABLE 1**NATIONAL FOREST PROGRAMME MATRIX**

Action Areas	Subprogrammes						
	Afforestation and Silviculture	Production of timber and non-wood products	Protection against fires and other hazards	Conservation of ecosystems, flora, fauna and heritage	Water	Local plans and village development	Institutional reform, modernization and capacity building
	(A)	(B)	(C)	(D)	(E)	(F)	(G)
I. State forests and surrounding areas	xxx	xx	xxx	xxx	xxx	xxx	xxx
II. Wider countryside	xxx	x	xxx	xx	x	x	x
III. Special sites	-	-	xx	xxx	-	xx	xx
IV. Ecotourism promotion	x	-	x	xxx	-	xxx	xxx
V. Information, publicity and education	x	-	xxx	xxx	-	x	x

Note : Crosses indicate the importance of types of activity in relation to the action areas, i.e. xxx : high, xx : medium, x: low

TABLE 2**A : AFFORESTATION AND SILVICULTURE**

Activities and Projects	Type	Details	Action Area	Organizations involved	Cost (over 10 years) CY£ 000	Duration
1. Afforestation/Reforestation of State forest land	Investment	Afforestation/Reforestation of bare and burnt areas	I	FD	3.000	10 years
2. Afforestation of state land (hali-land)	Survey	Survey and marking of the hali-land, which is estimated to be about 50.000 ha	II	FD,MI,LA LSD,AD	200	10 years
	Investment	Afforestation of hali-land (10.000 ha)	II	FD,LA	10.000	10 years
3. Afforestation of abandoned and degraded agricultural land	Investment	Afforestation of agricultural land (5.000 ha)	II	FD,AD, PO	2.000	10 years
4. Conversion of agricultural land to forest	Investment	Expansion of the project initiated in 1997	II	FD,AD, PO,LA	1.000	10 years
5. Linear forestry	Investment	Planting of windbreaks on agricultural land roadsides and state forest land in Larnaka and Famagusta districts	II	FD,PO, AD	200	10 years
6. Natural regeneration	Research	Study of ways to increase regeneration and stocking	I	FD	600	10 years

Table 2 continued

Activities and Projects	Type	Details	Action Area	Organizations involved	Cost (over 10 years) CY£ 000	Duration
7. Silvicultural operations	Forest management	Tending operations to support multiple use of the forests	I	FD	1.000	10 years
8. Improvement of private and communal forests	Investment	Assistance and incentives	II	FD,PO, LA	1.000	10 years
9. Forest Inventory	Management	Remeasuring sample plots and inclusion of environmental data	I	FD	150	1-10 years
10. Criteria and Indicators for Sustainable Forest Management	Research	Testing criteria and indicators for application in Cyprus.	I	FD	50	1-5 years
11. Landscaping of government grounds	Investment/ Maintenance	Planting and maintenance of grounds	III	FD	1.000	10 years
Total :					20.200	

TABLE 3**B : PRODUCTION OF TIMBER AND NON-WOOD PRODUCTS**

Activities and Projects	Type	Details	Action Area	Organizations involved	Cost (over 10 years) CY£ 000	Duration
1. Silvicultural operations	Forest Management	Treatment to improve productivity of stands, mainly thinnings	I	FD	3.000	10 years
2. Irrigated Plantation Development	Research/Investment	Species trial, establishment and management of fast growing plantations, using treated sewage water	I, II	FD, LA, ARI, CFI	100	10 years
3. Harvesting of timber and other forest products	Investment	Construction and maintenance of extraction roads	I	FD	1.000	10 years
	Research	Improvement of marking methods, and harvesting operations	I	FD	50	1 - 5 years
4. Non wood products	Survey	Survey of distribution and availability	I, II	FD,ARI, AD,	100	10 years
	Investment/Research	Aromatic and medicinal plants, game, apiculture, mushrooms, christmas trees, etc.	I, II	FD,ARI, AD,LA, GF	400	10 years
Total :					4. 650	

TABLE 4

C : PROTECTION AGAINST FOREST FIRES AND OTHER HAZARDS

Activities and Projects	Type	Details	Action Area	Orgni- zations involved	Cost (over 10 years) CY£ 000	Duration
1. Fire control outside State forests	Survey and planning	Preparation of maps and fire control plan	II	FD,DO, LA,FS, MI,PO	150	1-3 years
	Investment	Construction of access roads (1000 km) and fire traces (2000 km)	II	FD,DO, LA,MI,PO	4.000	10 years
	Investment	Construction of 50 concrete water tanks (90 tons capacity)	II	FD,DO, LA,FS, MI,PO	500	10 years
	Investment	Purchase of 5 Tenders (5-6 tons capacity) and 10 rapid intervention vehicles (0.5 ton capacity)	II	FD,DO, LA,FS, PO	475	10 years
	Maintenance	Maintenance of roads and fire traces	II	FD,DO, LA,MI,PO	200	10 years

Table 4 continued

Activities and Projects	Type	Details	Action Area	Orgni-zations involved	Cost (over 10 years) CY£ 000	Duration
Fire control out side state forests, continued	Investment	Establishment of hydrants	II	FD,FS, DO,LO	20	1-3 years
	Operations	Patrolling of areas not visible from Fire-Look-Out Stations	II	FD,DO, LO,P,FS	500	10 years
	Maintenance	Maintenance of fire fighting vehicles and equipment	II	FD,DO, FS,LO	200	10 years
	Investment	Purchase of fire fighting equipment	II	FD,FS, DO,LO	100	10 years
	Investment	Subsidies for fire prevention measures by rural communities	II	FD,PO, DO,FS, LO	250	10 years
	Operations	Fire Fighting-Task Force (50 persons)	II	FD,FS, P,LO,DO	3.345	10 years

Table 4 continued

Activities and Projects	Type	Details	Action Area	Orgni-zations involved	Cost (over 10 years) CY£ 000	Duration
2. Fire control in State forests	Operations	Fire Fighting	II	FD,FS,NG,DO,GF,LO	500	10 years
	Investment	Construction of access roads (100 km) and fire traces (1 000 km)	I	FD	800	10 years
	Maintenance	Maintenance of roads, and fire traces	I	FD	3.500	10 years
	Investment	Construction of 25 concrete water tanks (90 tons capacity)	I	FD	250	10 years
	Investment	Purchase of 10 Tenders (5-6 tons capacity) and 10 rapid intervention vehicles (0.5 ton capacity)	I	FD	650	10 years
	Investment	Establishment of hydrants	I	FD,WDD	20	1 - 5 years
	Investment	Purchase of brush clearing and other special machinery	I	FD	150	1 - 5 years
	Investment	Establishment of automatic detection system	I	FD	500	1 - 5 years

Table 4 continued

Activities and Projects	Type	Details	Action Area	Organizations involved	Cost (over 10 years) CY£ 000	Duration
Fire control in state forests, continued	Services	Hiring of helicopters	I,II,III	FD	2.000	10 years
	Maintenance	Maintenance of fire fighting vehicles and equipment	I	FD	500	10 years
	Investment	Purchase of fire fighting and safety equipment	I	FD	200	5 years
	Operations	Operation, maintenance and improvement of telecommunication systems	I	FD	700	10 years
	Operations	Manning of 13 Fire Look Out Stations	I,II,III	FD	5.000	10 years
	Operations	Fire Fighting Task-Force (220 persons)	I	FD	15.000	10 years
	Operations	Preparation of fire danger maps	I	FD	400	1-5 years
	Investment	Fire fighting	I	FD	500	10 years

Table 4 continued

Activities and Projects	Type	Details	Action Area	Organizations involved	Cost (over 10 years) CY£ 000	Duration
3. Public awareness campaign for forest fires	Investment	Education and use of media	V	FD,FS, MEC	100	10 years
4. Control of the processionary caterpillar (<i>Thaumetopoea pityocampa</i>) and other pests	Research/ Control	Combating outbreaks of caterpillar, using various methods i.e. ground spraying, air spraying, etc.	I,II	FD,LA, DO,PO, ARI,MI	500	10 years
			Total :		41.010	

TABLE 5**D: CONSERVATION OF ECOSYSTEMS, FLORA, FAUNA AND HERITAGE**

Activities and Projects	Type	Details	Action Area	Organization involved	Cost (over 10 years) CY£ 000	Duration
1. Environmental valuation study for policy making	Research	Follow up cost-benefit study of forest conservation including carbon sequestration in relation to energy use and role in water balance in Cyprus.	I,II	FD,ES, WDD,MCIT	50	1-5 years
2. Ecological survey	Survey	To provide base-line information on the status of ecosystems, flora, fauna, endangered species, etc. for monitoring change	I,II, III	FD,ES,MI, TPHD,ARI	500	1-5 years
3. Development of National Forest Parks	Survey	Locate survey, map and declare forest parks	I,III	FD, ES, TPHD,MI CTO,LA	50	1-5 years
	Survey/ Management	Collection of information for the preparation of management plans in the existing and new NFP.	I,III	FD, MI, LA,CTO	200	10 years
	Investment	Expansion and improvement of facilities	I, III	FD, LA	6.000	10 years
	Investment	Restoration of outstanding traditional buildings in Troodos NFP and elsewhere	I,III	FD,TPHO, CTO,	1.000	10 years

Table 5 continued

Activities and Projects	Type	Details	Action Area	Organizations involved	Cost (over 10 years) CY£ 000	Duration
4. Nature Reserves	Survey	Locate, survey, map and declare nature reserves	I, III	FD,ES MI, LA, CTO TPHD,	30	1-3 years
	Survey/ Management	Collection of information for the preparation of management plans	I, III	FD,ES, TPHD, CTO LA,MI	100	10 years
5. Giant trees and nature monuments	Survey / Investment	Locate and safeguard of giant trees and nature monuments	I, II, III	FD,ES, LA, MI, TPHD DO,MI	100	10 years
	Maintenance	Maintenance of giant trees and nature monuments		FD,LA TPHD	100	10 years
6. Cultural and heritage sites	Survey/ maintenance	Locate, collect information and maintenance of sites	I,II, III	FD,LA, TPHD, CTO	300	10 years

Table 5 continued

Activities and Projects	Type	Details	Action Area	Organizations involved	Cost (over 10 years) CY£ 000	Duration
7. Establishment of two environmental centres at Athalassa and Troodos	Investment/ Research/ Education	The erection of buildings has commenced and will be completed in 1-2 years. Furniture, equipment, exhibits etc. are needed.	I, V	FD CTO	400	1-3 years
8. Preservation of traditional forest structures	Investment/ Education	Restoration of traditional kilns for the production of charcoal, pens for sheep and coats, old forest buildings, old bridges etc.	I, II	FD TPHD PWD CTO MEC	500	10 years
9. Establishment of a Natural History Museum	Investment/ Research/ Education	Erection/restoration of building and provision of furniture, equipment, exhibits etc.	V	FD CTO MEC	500	1-5 years
10. Establishment and expansion of forest museums	Investment/ Research/ Education	Erection/restoration of building and provision of furniture, equipment, exhibits etc.	I, IV	FD,CTO MEC	300	1-5 years

Table 5 continued

Activities and Projects	Type	Details	Action Area	Organizations involved	Cost (over 10 years) CY£ 000	Duration
11. Herbarium	Investment / Education/ Research	Provision of buildings, furniture, equipment etc.	V	FD, ARI	100	1-3 years
12. Botanical Gardens and Arboretum	Investment/ Education/ Research	Further development of botanical gardens and arboretum	I, IV, V	FD ARI	100	10 years
13. Fauna management plans	Management	Population studies, management and control of wildlife	I	FD, MI	100	10 years
14. Development of the National Park of Akamas	Investment / Management/ Education	Implementation of the management plan for the National Park, prepared by the World Bank; protection and conservation of the part in State forest	I	FD,ES MI.DO,LA TPHD, CTO,PO, NGOs	500	10 years
	Investment/ Management	Restoration of degraded area <ul style="list-style-type: none"> Due to military exercises during more than 30 years about 2000 ha of forests has been burnt and degraded. 	I	FD	1.500	10 years

Table 5 continued

Activities and Projects	Type	Details	Action Area	Organizations involved	Cost (over 10 years) CY£ 000	Duration
Development of Akamas National Park, continued		<ul style="list-style-type: none"> Provision of incentives for the removal of livestock. It is estimated that 13000-14000 animals, mainly goats are grazing in the state forests 	I	FD,LA, MI,AD ARI,DO	2.000	10 years
	Investment	Construction of access roads and tracks for fire protection	I	FD	300	10 years
	Investment	Improvement and up-grading of the recreational facilities	I, IV	FD	300	10 years
	Research / Control	Protection of areas of special interest	I	FD	300	10 years
	Management	Increase of administrative capacity for the management and protection of the area	I, IV	FD, LA	500	10 years
	Investment / Education	Establishment of visitor centre	I, V, IV	FD,CTO TPHD,LA	200	1-5 years

Table 5 continued

Activities and Projects	Type	Details	Action Area	Organizations involved	Cost (over 10 years) CY£ 000	Duration
15. Information, publicity and education	Investment	Preparation of literature, pamphlets, posters, films, internet, etc.	V	FD,LA CTO, MEC	300	10 years
16. Monitoring of the effects of atmospheric pollution on forest ecosystems	Research/ Monitoring	Location and measuring of sample plots	I, II, III	FD,LA, ARI	100	10 years
17. Conservation of forest genetic resources	Investment/ Research	In-situ and ex-situ conservation	I,II,III	FD, ARI	100	10 years
			Total :		16.030	

TABLE 6**E : WATER**

Activities and Projects	Type	Details	Action Area	Organizations involved	Cost (over 10 years) CY£ 000	Duration
1. Watershed improvement study	Survey/ Research	Investigation of possibilities of increasing storage and supplies	I, II	FD, WDD GSD, ARI AD	100	1-5 years
2. Watershed management	Management	Soil conservation and vegetation management in selected areas to improve absorption of rainfall	I, II	FD,WDD, GSD,ARI, AD	300	10 years
			Total :		400	

TABLE 7**F : LOCAL PLANS AND VILLAGE DEVELOPMENTS**

Activities and Projects	Type	Details	Action Area	Organizations involved	Cost (over 10 years) CY£ 000	Duration
*1. Comprehensive Plan for development of forest areas and villages	Planning	Preparation of integrated plan, under provisions of Town and Country Planning law, to provide overall direction, infrastructure, zoning, financial incentives, building regulations etc. to guide and control recreation and tourism	I, II III, IV	FD, LA, MCIT, PO	600	1-2 years
*2. Environmental Impact Assessments	Planning	EIAs to screen proposed developments (up to 20 public sector schemes plus private proposals furnished by applicants)	I, II III, IV	FD, TPHD, ES, LA, DO, CTO, PO	200	10 years
*3. Village infrastructure and forest amenity	Investment	Schemes to improve water supplies, local roads, village squares, heritage buildings and provide facilities for eco-tourism in forest areas, in accordance with comprehensive plan	I, III IV	FD, TPHD, ES, LA, DO, CTO, PO	2.000	10 years

* The appropriate lead agency for these projects is not necessarily the Department of Forests

Table 7 continued

Activities and Projects	Type	Details	Action Area	Organizations involved	Cost (over 10 years) CY£ 000	Duration
*4. Incentives for eco-tourism development	Investment	Package of incentives to encourage village participation in investment opportunities through capital grants, loans etc. in accordance with comprehensive plans	I, III, IV	FD, TPHD, ES, LA, DO, CTO, PO	10.000	10 years
5. Promotion of small-scale based industrial development in forest villages	Investment	Capital grants and technical assistance to improve equipment, production methods, marketing skills and forest harvesting methods	I, IV	FD, LA, MCIT, PO, CTO, TPHD	1.000	10 years
				Total :	13.800	

* The appropriate lead agency for these projects is not necessarily the Department of Forests

TABLE 8**G : INSTITUTIONAL REFORM, MODERNIZATION AND CAPACITY BUILDING**

Activities and Projects	Type	Details	Action Area	Organizations involved	Cost (over 10 years) CY£ 000	Duration
1. Harmonization of law, regulations and procedures	Administrative	Revision of forest legislation to be done by consultants : - to accord with the Acquis Communautaire, - to harmonise with laws relating to the environment, town and country planning, game and shooting, and fires, etc.	I, II, III IV, V	FD,ES, MI,TPHD, GF,DO	50	1 year
2. Forestry Department reorganization and capacity building	Administrative	Review of organizational changes necessary to implement the new strategy.	I,II,III IV,V	FD	-----	1-2 years
		Training and retraining of staff	I,II,III IV,V	FD	500	10 years
		Project preparation and planning unit	I,II,III IV,V	FD	250	10 years
3. Expansion of new technology	Investment	Improvement and up-grading of the communication system and information technology	I,II,III IV.V	FD	250	10 years

TABLE 8 continued

Activities and Projects	Type	Details	Action Area	Organizations involved	Cost (over 10 years) CY£ 000	Duration
4. Forestry education	Administrative	New curriculum and courses to provide a wider range of training at the Forestry College	V	FD	4.000	10 years
	Investment	Buildings and facilities	V	FD	1.000	10 years
5. Forestry extension	Administrative	Technical assistance and incentives to private owners	II	FD, AD, LA, PO	100	10 years
Total :					6.150	

3.4 Costs and timing

Tables 2 – 8 show estimates of costs of the projects over the ten-year period of the NFP. These figures are intended to give general indications only; they are not precisely calculated figures. Some projects are finite and can be completed in a given time, others are expected to continue throughout the plan period.

The average annual costs and total costs over ten years, by subprogrammes, are shown on the following table:

TABLE 9 - COSTS

Subprogrammes	Average annual cost CY £ 000	Cost (over 10 years) CY £ 000
A. Afforestation and silviculture	2.020	20.200
B. Production of timber and non-wood products	465	4.650
C. Protection against fires and other hazards	4.101	41.010
D. Conservation of ecosystems, flora, fauna and heritage	1.603	16.030
E. Water	40	400
F. Local plans and village development	1.380	13.800
G. Institutional reform, modernization and capacity building	615	6.150
Total	10.224	102.240

3.5 Benefits

The benefits derived from the forest sector are substantial, although difficult to measure and evaluate. Some are tangible, such as timber, while others are intangible services of various kinds. The sector generates incomes, employment and trade from which the whole community benefits. In Cyprus, the value of the social benefits derived from services and other indirect uses of the forest is much greater than the direct value obtained from sales of wood and non-wood products.

The list of benefits derived from the forests of Cyprus includes:-

- Timber,
- Non-wood products, eg. game, honey, medicinal and aromatic plants,
- Tourism, which the forests help to generate,
- Recreation,
- Scenery and landscape,
- Protection of part of the national heritage,
- Watershed protection,
- Soil conservation and nutrient recycling,
- Reduction of air pollution,
- Carbon sequestration,
- Protection of flora, fauna and ecosystems,
- Biodiversity and preservation of genetic potential

Watershed protection and soil conservation benefits are provided mainly by subprogrammes A and C, which seek to improve the vegetative cover, prevent soil erosion and increase permeability in the main catchment areas; water supplies in Cyprus largely depend on such measures. Subprogramme E aims specifically at other ways to increase the quantity of water coming from the forests. Subprogramme B is directed at the benefits from timber and non-wood products. Subprogramme D is focussed on landscape, nature conservation and biodiversity benefits, which also impact on recreation and tourism. Subprogramme F provides recreation and tourism benefits by preserving heritage features and protecting the quality of the environment.

An attempt to value some of these benefits has been made by means of cost-benefit analysis. The results showed that the social benefits derived from (a) water from boreholes and springs, (b) recreational visits by tourists and residents, and (c) soil conservation benefits for agriculture, which were attributable to the State forests, amounted to about 303 Cyprus pounds per ha each year. Applied to the whole forest area, the total value of benefits derived from tourism, water and agriculture amounted to about 36.7 million Cyprus pounds annually. This is a conservative estimate which allows for data inaccuracies and uncertainties. It is also a partial estimate because many of the items in the above list are not included. The total benefits, from all sources are undoubtedly much larger than this. In comparison, the revenue derived from sales of timber by the Forestry Department is very small, amounting to about 0.5 million pounds or 4.1 pounds per ha, per year. The net cost of managing the State forests, taken from the government budget, amounts to about 7 million pounds (or 58 pounds per ha.). Without doubt, the social benefits derived from the forests far outweigh the costs of providing those benefits.

3.6 Incremental costs and cost of harmonization with E.U.

The average annual cost of the proposals in the subprogrammes amounts to approximately 10.2 million pounds. The present government budget of the Forestry Department (excluding personal emoluments and exceptional items of road construction) amounts to about 4.9 million pounds. Therefore nearly half of the total annual cost of the subprogrammes can be covered by the present Forestry

Department budget with some reallocation to meet the new priorities. The estimates shown in the tables do not include salaries and other emoluments.

Table 10 shows the additional annual expenditure requirements by subprogrammes.

TABLE 10 - INCREMENTAL COSTS

Subprogrammes	Present annual budget CY £ 000	Additional annual requirements CY £ 000
A. Afforestation and silviculture	940	1.080
B. Production of timber and non-wood products	735	(-270)
C. Protection against fires and other hazards	2.208	1.893
D. Conservation of ecosystems, flora, fauna and heritage	615	988
E. Water	---	40
F. Local plans and village development	---	1.380
G. Institutional reform, modernization and capacity building	360	255
Total	4.858	5.366

The costs of harmonization to meet the strict legal requirements for joining the European Union, extracted from the tables, are estimated at approximately 0,5 million pounds. In addition, there will be costs of meeting international conventions on the environment, biodiversity, arresting land degradation and atmospheric pollution, which the EU and Cyprus have accepted. Implementation of EU policies, directives and regulations will involve expenditure tentatively estimated at about 5 million pounds, mainly for afforestation of private agricultural land, incentives for development of private forestry and rural plans.

3.7 Resource mobilization, deployment, financing and investment

These subprogrammes involve important changes to the way that the Forestry Department's existing resources are deployed. It will be necessary to alter the balance of effort towards environmental protection and away from timber growing activities. A new set of priorities is necessary.

Joint action with other agencies will also draw in some of the resources at their disposal. Some items in the subprogrammes should be financed from the budgets of other ministries (eg. environmental impact assessments). In general, the forest sector will benefit from the contributions of people, expertise and facilities which were not accessible previously. The function of the Forestry Department in this respect will be to mobilize resources from other sources and use the facilities at its disposal to generate additional resources from outside. It is hoped to attract private sector finance for some projects, particularly those concerned with tourism.

Substantial progress can be made by redeployment within the limits of existing budgets. However, the NFP also involves some additional recurrent expenditure, mainly on conservation activities, and larger amounts for particular capital projects. The investment requirements indicated in the subprogrammes are considerable, but it is expected that external assistance from the European Union and other sources will be forthcoming for some of them. The NFP meets the rural development aims expressed in EC Council Regulation No. 1257 of 1999 and Cyprus will therefore become eligible to benefit.

Priorities within the subprogrammes will be determined to some extent by the availability of funds at the time, as allocated for particular projects by other agencies according to their criteria and preferences. In some cases one project will lead to another, e.g. a research study may lead to another project to apply the results.

3.8 Programme evolution and project preparation

The NFP adopts an evolutionary approach to subprogrammes and projects. The subprogrammes are outlines, which indicate in general terms the kinds of action that are needed. They consist of sets of projects necessary to achieve the required results. The projects have not been planned in detail; this remains to be done and will involve considerable effort. In practice, some modifications to the project proposals are likely in order to meet unforeseen circumstances. The NFP is not intended to be a rigid document. It provides a flexible framework for continuous development.

The speed of implementation depends on the rate at which projects can be planned and executed. Detailed project preparation includes a full specification of the resources needed, the action to be taken, their timing, and schedules of the costs and expected benefits of each project. Every project requires justification, to convince those who administer budgets that it is worthwhile, viable and cost-effective; investment projects will need financial and economic appraisal. Well-prepared projects are essential to attract outside investment and international aid.

It is proposed that a small, Project Preparation and Planning Unit be set up within the Forestry Department, to concentrate on this important function. The same unit would keep track of progress, by recording and reviewing projects' performance, after they were in operation. It would maintain a project data base for this purpose.

3.9 Monitoring, evaluation and review

Progress needs to be monitored and recorded. The Forestry Department already collects many items of information for various purposes and the system can be expanded to cover the needs of the NFP. Records should be stored in the system by reference to the seven subprogrammes. Progress can also be measured using the criteria and indicators of sustainable forest management selected for Cyprus.

The existing geographic information system (GIS) and forest inventory data base will need to be amplified to include a wider range of information related to (a) conservation, and (b) tourism and recreation. Records of the distribution of ecosystems, flora and fauna (species and frequency) and their changes over time, are necessary for the former, and data concerning forest villages, visitors to national parks and nature reserves, and the use of recreational facilities are required for the latter. Links with the data systems maintained by other government departments and agencies may be developed to share useful information and encourage compatibility.

A mid-term assessment of NFP performance and a terminal evaluation of success of the strategy will be undertaken.

3.10 Capacity

The present capacity of the Forestry Department has been built up for somewhat different purposes than are envisaged by the new strategy. The Department has developed its organizational capacity and special expertise in several types of activity, viz. forest management for timber production, silviculture and afforestation, fire protection and experience with the provision of facilities for recreation and tourism in forest areas. It has less experience, as an organization, with wildlife conservation, the management of non-forest ecosystems and nature reserves, or the full range of varied activities associated with national park administration and development. These capacity limitations can be addressed by redeployment, training and, where necessary, the recruitment of staff trained in other disciplines.

The subprogrammes attempt to deal with particular capacity limitations by including provision for capital works, equipment and facilities. More generally, institutional and organizational limitations are addressed in subprogramme G.

3.11 Sustainability

Pan-European criteria for sustainable forest management have been introduced and a similar set of criteria is being developed for Near East countries. It is the intention in Cyprus, at the earliest opportunity, to develop and adopt local criteria and indicators, which comply with these requirements but are adapted to suit the forestry situation in the island.

A set of seven criteria is being examined, which will need to be tested:-

1. Extent of forest resources,
2. Conservation of biological diversity in forest areas,
3. Health, vitality and integrity,
4. Productive capacity,
5. Protective and environmental functions,
6. Maintenance and development of socio-economic functions and conditions,
7. Legal and institutional framework.

4 PARTICIPATION, COOPERATION AND COORDINATION

4.1 Sector responsibilities and sectional interests

The forest sector is an association of interdependent interests. Many organizations and individuals are involved in different ways and to varying degrees. They have separate responsibilities outside the forest sector, but also responsibilities within it. It is necessary for them to combine, reconcile their differences and generate a sense of sectoral awareness. They have a common interest in the success of the NFP from which all who participate in its activities stand to benefit.

Previously, most of the work of the Forestry Department has been concerned with protection and management of the State forests, although its remit is more general according to the official forest policy. Thus for example, the Department's very important fire protection activities are concentrated in the main forests and adjacent areas in Macheras, Adelphi, Troodos and Paphos, leaving wildfires elsewhere to the Fire Service, the Game and Fauna Service and local authorities. The new strategy (and the NFP) requires the Forestry Department to adopt a higher profile and become more proactive in the wider countryside.

In State forests, the Forestry Department is in direct control of events and can act accordingly; elsewhere it can provide leadership, but cannot be expected to do all the things that need to be done. Progress with afforestation, land restoration, environmental protection, conservation of the native flora and fauna etc. requires joint action. Private landowners, companies and other government departments are involved, the vested interests of various individuals and groups may be affected and, in a democracy, progress comes through agreement. A policy of collaboration in the NFP is essential, so that work is allocated according to the capabilities of the participants and benefits are equitably shared amongst those who contribute. The Forestry Department has much to offer, but it cannot implement the NFP on its own.

A policy of joint action is required, with the Forestry Department providing leadership to keep the whole programme moving forward and on track, generate momentum and drive, and supply continuity, coordination and accountability.

4.2 The Forestry Department's mission

The new role of the Forestry Department is described in the following Draft Mission Statement:-

"The **mission** of the Forestry Department is to administer the State forests and to act as the lead agency for implementation of the National Forest Programme in Cyprus. While carrying out these functions, the Forestry Department aims to serve, to the best of its ability, the Government and the people, for the benefit of all sections of society, while respecting legitimate European and international concerns.

The Forestry Department is responsible for managing the State forests, serving as a custodian of the natural environment and the national heritage. It protects forest ecosystems, flora, fauna, soils and scenery from natural hazards, fires, encroachment and other damaging human activities. It aims to obtain the maximum sustainable flow of outputs of all kinds from the forests, including wood and non-wood products, water, amenity and recreation services, in proportions that reflect the requirements of society. It endeavours to support the village communities which are located in the forests.

As the **lead agency** for the National Forest Programme (NFP), the Forestry Department is responsible for promoting development of the forest sector as a whole through joint action with other government organizations, local authorities, commercial enterprises and private interests. These activities cover the wider countryside outside the main forest areas, including afforestation and the restoration of degraded land, and extend to the conservation of ecosystems which are not dominated by trees or woody vegetation. The Forestry Department provides leadership, oversight, coordination, continuity and accountability for the NFP. It also contributes directly where appropriate, by making available for a wider range of development purposes, the expertise, organizational experience and facilities built up for the State forests over a number of years. It seeks to extend its capacity for managing national parks and nature reserves.”

4.3 Participation in the subprogrammes and projects

Many different ministries, departments and other government agencies will be involved in the implementation of the NFP and contribute to its finance; also, elected local authorities, private sector organisations, individuals, landowners, commercial enterprises and NGOs. These are shown in the list of acronyms which accompanies Tables 2 – 8. The organizations that are involved in each project are indicated in the appropriate column in the tables.

4.4 Steering the subprogrammes

It will be the task of the Forestry Department, acting as lead agency for implementation of the NFP, to coordinate activities and oversee action under each of the subprogrammes and to keep track of the progress of the projects. The Project Preparation and Planning Unit, as proposed in s. 3.8, will have this responsibility.

4.5 Consultation

Wide consultation with the organizations involved in the projects will be essential, in order to stimulate their interest and establish a cooperative attitude. There are some formidable hurdles to be overcome through joint action in the wider countryside, which involve several ministries. Close cooperation of departments within the Ministry of

Agriculture, Natural Resources and Environment will be essential to deal with problems affecting conservation and the development of national parks.

At present there are no formal procedures for consulting local opinion in the forest villages, although the vital interests of villagers may be affected. Relationships at the personal level between forest staff and the people who live in the villages are good, but it would be advantageous to establish a system that ensured that local communities had opportunities to make known their views on matters which concerned them. Suitable procedures will be devised for this purpose.

4.6 Harmonization of laws, regulations and administrative procedures

The Forest Law and Regulations in Cyprus have been in force for many years and requires updating. At the same time, it is necessary to harmonize this legislation with the *Acquis Communautaire* before Cyprus joins the European Union. The forest legislation also needs to be harmonized with other legislation in Cyprus, particularly regarding the environment, town and country planning, game and hunting permits and fire control. Revision of the law should clarify the position over national parks, nature reserves, monuments and areas of outstanding natural beauty, which may be located outside as well as inside the State forests. It is hoped to carry out this review at an early date, using the services of a consultant.

4.7 Conflict resolution

During the strategic review, attention was drawn to number of major issues affecting the forest sector, which are sources of conflict. Until these matters are settled between the Forestry Department, the Ministry of Agriculture, Natural Resources and Environment and other Ministries, progress in the forest sector will continue to be held back. The issues include:-

- Hunting in the forests which often conflicts with recreation and nature conservation objectives; the Ministry of the Interior and The Game Service are involved.
- Afforestation of 'hali' land; the Ministry of the Interior is involved.
- Establishment of National Parks and Nature Reserves; involves the Environmental Service, the Town Planning and Housing Department, and Local Authorities amongst others.
- Tourism and recreation development affecting State forests and forest villages; involves the Cyprus Tourism Organisation, the Town Planning and Housing Department and the Ministry of Interior amongst others.
- Harmonization of legislation to secure conservation objectives; the Town Planning and Housing Department, the Environmental Service and others are involved.
- Improved fire fighting arrangements for areas outside the State forests; The Police, Fire Service, District Officers, Local Authorities and others are involved.

Procedures are required to work out satisfactory solutions to these (and other differences of opinion that may arise in future). They are sensitive inter-departmental issues, which will require political decisions. Other conflicts of a local nature, often involving land use, will need to be dealt with through established development planning procedures and may need to be settled by payment of compensation.

4.8 Organizational change

Successful implementation of the NFP depends on organizational change. The strategy represents an important shift in direction, which affects the Forestry Department first and foremost, but also affects the many other organizations and individuals who are associated with the forest sector in one way or another. The Forestry Department can lead the way in these matters and, fortunately, its standing is high in public opinion, so that it is influential. There are likely to be 'knock on' effects on attitudes in other organizations and consequential changes in the way they operate.

5 THE INTERNATIONAL DIMENSION

5.1 The two-way flow

The forest sector in Cyprus generates an outward flow of benefits and contributions, and receives in return an inward flow of investment and resources from abroad. A two-way interaction process is taking place, which is helpful to the economy of Cyprus. The NFP seeks to increase these flows in both directions.

The flows include:-

Outward

- ❖ benefits of environmental protection in Cyprus, which contribute to maintaining global biodiversity;
- ❖ benefits of carbon sequestration by the forests in Cyprus, where net increases in the growing stock and biomass result in more carbon being captured than is returned to the atmosphere, thus reducing the 'greenhouse effect' on world climate;
- ❖ facilities provided for international tourism, improving the quality of life for foreign visitors;
- ❖ foreign students attending the Forest College in Cyprus, who receive training which benefits their home countries;
- ❖ trade benefits for other countries, due to imports of forest products to meet the needs of the Cyprus economy.

Inward

- ❖ the contribution of imports of forest products for consumption and capital investment purposes in Cyprus, which improves the standard of living;
- ❖ The multiplier effect on the Cyprus economy of spending by visitors from abroad.
- ❖ investment from abroad, some of which is stimulated by the opportunities provided by forest sector development activities;
- ❖ external assistance, from the European Union and international agencies, for forest sector development and the projects contained in the NFP.

5.2 Membership of the European Union

It is the intention of Cyprus to join the European Union. Membership is expected to benefit the forest sector in Cyprus and its future development, both directly and indirectly. The E.U. has several programmes under which Cyprus would be eligible to benefit, including purposes such as carbon sequestration, the conversion of agricultural land to forest, rural development, support for forest villages, fire protection, and development of national parks and nature reserves.

5.3 Role in Mediterranean forestry

Support for preparation of the strategy review and the NFP has been provided by FAO under the Mediterranean Forestry Action Plan. This Plan is an important initiative, aimed at halting the degradation of forests in the Mediterranean basin. It constitutes the reference framework for preparation of National Forest Plans in the region. Cyprus has lead the way amongst countries in the Mediterranean area and Near East by developing an innovative methodology and format for NFP preparation, which may serve as a model for other countries to follow.

NATIONAL FOREST POLICY STATEMENT FOR CYPRUS

1 Preamble

This Policy Statement contains the official forest policy of the Government of Cyprus. It replaces the previous policy statement, issued in 1950 and reconfirmed after Independence in 1960.

The Department of Forestry has carried out a strategic review of the forest sector in Cyprus in order to determine the best direction for its future development. A new strategy has been formulated, which the Government endorses, and a National Forest Programme (NFP) has been drawn up to give effect to this strategy. The new National Forest Policy Statement is in a different format, which relates the aims of the policy to the action required to achieve those aims, as set out in the NFP.

The new strategy, known as the Rural Betterment Strategy, seeks to protect and improve the natural environment of Cyprus, for the benefit of all citizens and visitors from abroad. The strategy is based on multiple use of the forest resources. It is directed at improving the condition of the forests, conservation of soils and watersheds, protection of the flora, fauna, biodiversity and heritage sites, the promotion of ecotourism, and sustainable production of wood and non-wood products, up to the limits of the capacity of the forests to supply them. The strategy is designed to meet society's changing needs and the expectation that Cyprus will join the European Union.

This Forest Policy Statement sets out the strategy and provides guidance for its implementation. It includes the general conditions (*imperatives*) that must be observed and the detailed *policy objectives* that will be followed when implementing the NFP. It identifies the *constraints* or impediments to development that must be overcome, the *criteria* by which success will be judged, and the *indicators* used to measure progress.

2 Strategic aims

The strategy aims at the betterment of rural areas through forestry action:-

- better conservation of natural resources,
- better facilities for visitors,
- better forest villages,
- better rural environment

3 The Rural Betterment Strategy

The strategy for the forest sector, which has been adopted, aims at safeguarding forest resources for the benefit of the whole community, while capturing the advantages of development based on ecotourism. The strategy will be achieved by:-

- ❖ action to protect and enhance water supplies, wildlife and the national heritage in State forests;
- ❖ afforestation and the restoration of degraded land in the wider countryside;
- ❖ safeguarding (as national parks, nature reserves etc) particular places which have outstanding scenery, cultural importance, exceptional ecological or scientific interest, and developing them for recreation and tourism where this does not conflict with conservation aims. These special sites will be delineated both inside and outside the State forests;
- ❖ encouraging, guiding and controlling recreation and tourism development through Local Plans, zoning and development permits, in conformity with Town and Country Planning Regulations, on the strict proviso that State forests will on no account be used for building development;
- ❖ providing information and publicity about the forests and the flora and fauna they contain, directed particularly at schools, colleges, tourists and the general public, using up-to-date information technology and interpretative techniques.

4 Imperatives

Three overriding general conditions apply to this strategy and the NFP. All forest sector activities should be:-

- ❖ Holistic, i.e. based on a comprehensive view of forest resources and the activities associated with them, taking account of the interactions and linkages which connect them, and treating the forest sector as one unit instead of separate parts.
- ❖ Sustainable, so that the sector's capacity to provide future outputs and benefits of all kinds is not diminished and the stock of natural resources is not depleted.
- ❖ Equitable, to ensure that benefits and costs are distributed widely and fairly among all sections of society, with due regard to the needs of future generations.

5 Implementation

The strategy will be implemented by means of the National Forest Programme, which covers the ten-year period, 2000 – 2009.

The NFP consists of a complex set of activities and related projects of various different kinds. It is divided into seven subprogrammes, which, taken together, are designed to achieve the aims of the strategy. It relates the five categories of action identified by the strategy, on which activities need to be concentrated, to the seven groups of associated activities which make up the subprograms. The five action areas and the seven subprogrammes form a matrix, which connects the strategic aims with the means of achieving those aims. This matrix provides a flexible framework for forest sector development, which can be elaborated and expanded as the programme progresses, to match the availability of resources and the speed at which organizational changes take place.

The strategy builds on the well-established capabilities and expertise of the Forest Department by spreading them more widely through collaboration with other ministries, departments and agencies. The Forest Department can initiate action in the State forests (which it controls), and extend its operations, by agreement with others, either acting alone or by joint ventures, to other rural areas outside the main forests. There need be no delay in beginning to implement the strategy, although the subsequent rate of progress will depend on the capacity and willingness of other organizations to cooperate.

The NFP involves reform of the forest sector's organization, structure and institutions. Restructuring is necessary to contribute more effectively to the welfare and economic development of society as a whole. With support from the Ministry of Agriculture, Natural Resource and Environment, the Forest Department can reach out, offering assistance to others where there are shared interests, and starting a dialogue where there are differences that need to be resolved. At international level, the strategy conforms to the requirements for joining the European Union and offers the prospect of obtaining financial assistance from external sources.

6 Policy objectives

The strategy and the imperatives provide a general policy framework within which specific aims have been formulated. This framework requires interpretation to reflect the way that the resources of the forest sector are to be used in the NFP. The detailed policy objectives which will guide implementation of the NFP are related to the subprogrammes as follows:-

Subprogramme A. Afforestation and silviculture.

This subprogramme is primarily concerned with the physical condition of the State forests and wider countryside. Afforestation aims at increasing the forest area and silvicultural operations seek to improve its quality for conservation purposes.

This subprogramme has the following specific objectives:-

- extending the forest area by afforestation, particularly on *hali* and private land,
- increasing the density of vegetative cover and preventing environmental degradation,
- safeguarding the flora, fauna, ecosystems and biodiversity,
- improving the scenic quality of the landscape,
- increasing forests productivity, to supply timber and non-wood products.

Subprogramme B. Production of timber and non-wood products.

The aim of this subprogramme is to increase economic and social benefits from the State forests and wider countryside by:-

- increasing the output of timber for processing, mainly by small enterprises situated near the forests,
- developing the cultivation, rearing of wildlife, harvesting and marketing of non-wood products, such as mushrooms, birds, honey, medicinal and aromatic plants,
- generating incomes and employment to support forest villages and rural areas.

Subprogramme C. Protection against fires and other hazards.

This subprogramme seeks to increase the effectiveness of protective measures in the State forests and adjacent land, and to extend the fire control system to cover other rural areas. More specifically, the objectives include:-

- preparing maps and fire plans,
- improving fire detection and the associated telecommunications system,
- providing better access by investment in roads, tracks, fire traces etc.
- purchasing additional, specialized firefighting vehicles and equipment,
- constructing extra water tanks and hydrants,
- increasing the size of the firefighting task force and the effectiveness of its response,
- hiring helicopter assistance when necessary,
- more collaboration with other agencies in fighting fires, under joint fire plans,
- increasing public awareness of fire dangers by education and use of the media.

Subprogramme D. Conservation of ecosystems, flora, fauna and heritage.

A wide range of specific conservation objectives, which relate to all five action areas, is included in this subprogramme:-

- estimating the value of forest conservation measures by further study of their costs and benefits,

- ecological survey to determine the present status of ecosystems and species, as a baseline for monitoring future change,
- development of the existing forest parks and other protected areas,
- implementing the Akamas National Park proposals to prevent further degradation of the area and introduce management for conservation and recreation purposes,
- providing facilities for public information, study and research, including visitor centres, museums, monuments and botanic gardens,
- disseminating information relating to the heritage and natural resources of Cyprus,
- monitoring the effects of atmospheric pollution,
- conserving genetic resources.

Subprogramme E. Water.

Watershed management and protection are provided for by subprogrammes A and C, which seek to extend and improve the vegetative cover, prevent soil erosion and increase permeability in the main catchment areas; water supplies in Cyprus largely depend on such measures. Subprogramme E aims specifically at other ways to increase the quantity of water coming from the forests by:-

- investigating the possibilities of increasing aquifer storage,
- measures to increase absorptive capacity, where possible, in selected areas.

Subprogramme F. Local plans and village development.

Development for tourism and recreation needs positive direction and control to protect the quality of the environment and preserve the traditional character of forest villages. These cut across departmental responsibilities. The aim of this subprogramme is to encourage appropriate development, based on ecotourism, within the framework of comprehensive area plans. The specific objectives include:-

- area planning and control measures to regulate development in the State forests and villages in surrounding areas,
- environmental impact assessment to screen development proposals,
- support for the improvement of village infrastructure and amenities,
- incentives for ecotourism,
- promotion of small-scale industrial development near the forests.

Subprogramme G. Institutional reform, modernization and capacity building.

Successful implementation of the strategy depends on overcoming various institutional limitations on forest sector development. This subprogramme aims at removing these constraints and includes the following specific objectives:-

- harmonization of laws, regulations and procedures to correspond with European Union requirements,

- harmonization of the forest legislation and regulations with other legislation in Cyprus, particularly where it relates to environmental, conservation and resource issues,
- training and retraining of forest staff,
- reorganization and capacity building in the Forestry Department,
- taking advantage of advances in communications and information technology,
- reform of training provided at the Forestry College,
- support and incentives for private forestry.

7 Constraints

Implementation of this strategy is restricted by the availability of resources, the capacity of organizations in the forest sector to expand their activities or take on new responsibilities, and by institutional rigidities which prevent change and hamper initiatives. The NFP subprogrammes include specific proposals to overcome these difficulties. Collaborative attitudes need to be encouraged and the Forestry Department, while acting as lead agency for the NFP, is expected to work with others to achieve results. Lack of know-how, and the limits to present scientific knowledge and technology also prevent progress. Efforts are necessary to overcome these constraints, which the NFP attempts to address. Some key projects must be undertaken first because others depend on them. Priorities need to be assessed and revised from time to time to meet changing circumstances.

8 Criteria and indicators

Pan-European criteria for sustainable forest management have been introduced and a similar set of criteria is being developed for Near East countries. It is the intention in Cyprus, at the earliest opportunity, to develop and adopt local criteria and indicators, which comply with these requirements but are adapted to suit the forestry situation in the island. The application of these criteria and indicators will ensure that the forest resources will continue to be used sustainably.

The speed and success of NFP implementation will be assessed by monitoring progress and comparing achievements with the specific objectives set out in the National Forest Policy.