

FOREST POLICY AND ISSUES TO BE ADDRESSED

The forest policy is meant to provide a framework for the distribution of rights in terms of utilisation of the resources in a sustainable manner that would not hinder the regeneration capacities of those same resources. The issues to be addressed will vary according to the vegetation type, the region and the intensity of the pressure on the resource.

I. A sustainable approach to the management of upland forests and Other Wood lands (OWL)

The upland forests (mainly cedar, fir, juniper and some broadleaves) were largely exploited over history, for the satisfaction of several needs, which has led to a depletion of the resources and to their confinement in relict forests. Nowadays the needs have changed and evolved. The need for timber is increasing with the requirements of modern life, the need for fuel-wood is increasing with poverty and the need for outdoor recreation has emerged with the increasing urbanization of the society.

1. Satisfy the demand for wood and non-wood forest products

a. Wood: The needs for wood and timber have an increasing importance in our (which?) society, whether they are for construction, furniture, paper, packaging, industry or and even for fuel. The annual demand for the different types of wood in Lebanon, along with the trade balance will have to be studied at a later stage.

It is clear that under the present conditions, wood production cannot be the main use of forests in Lebanon. This is due to three main reasons:

- The current forest cover is too low to provide a sustainable wood production.
- The quality of the wood is not satisfactory because of the lack of appropriate (silviculture) tending operations?.
- The forest is not perceived by the highly urbanized society as a source of wood and timber. Perhaps they perceive it as a sources of goods other than wood!!!!

The results of the first national forest assessment gave (give us) an idea about the actual standing volume of the forests and OWL in Lebanon. As the assessment was undertaken for the first time, no data exists yet on the annual increment (growth). It is therefore very difficult to propose a harvesting model for the different types of forests. This would only be possible after the second National Forest Assessment (NFA) and beyond.

The production of wood cannot be considered under the current international market trends, as the wood that could be produced in Lebanon could not compete with wood produced in different conditions. A few species could however be considered for the future, like Cedar, Fir, Juniper, Oak...The wood produced from these species could only

be for a niche market of luxury items and handicrafts. The production of timber and logs is beyond the scope of this study, as it would go beyond 2020.

Several species native to the Mediterranean region or even endemic to Lebanon, both conifers and broadleaves, could offer an interesting potential for the production of a good quality wood, like cedar, juniper, fir, pine, walnut, cherry, oak, sorbus, poplars... These species could be used for reforestation/afforestation on marginal lands, on abandoned agricultural land, in plantations...

In addition to these species, some exotic species could be used in plantation, and treated as (wood orchards) plantation forest? Agro-forests?. Some private initiatives are currently taking place in Lebanon with the plantation of Pawlonia.

Wood production would certainly encourage local community groups and local populations to plant forests on marginal and on communal lands. While providing an interesting source of additional income, this would reduce the stress on natural forests by reducing the illicit harvesting of trees. The proper application of the forest law mentioning the reforestation/afforestation certificate would contribute to the development of forest plantations. Upon reforestation/afforestation, the Ministry of Agriculture issues (delivers) a certificate that allows the owner of a land to harvest the wood produced after a certain number of years. This article might have to be amended and adapted to reality ?the actual context.

This certificate could contribute to meeting the needs for both fuel-wood and timber for small industries.

After several years of banning, charcoal production is currently allowed under certain conditions.

Even though the forests of Lebanon cannot cover all the needs of the local population for wood, some needs like the need for fuel-wood could be met in a sustainable manner. The low quality wood could be used for the production of particle board. Small wood industries could be encouraged.

b. Non Wood Forest Products (NWFP): Under the current situation, the forests are mainly used for the extraction of non-wood forest products. These products should be encouraged as some of them constitute a major source of income for the rural populations.

The legislation should be enforced and eventually amended in order to ensure the sustainable use of these products and the protection of the population rights.

In order to ensure the sustainability of the production of the NWFP and to contribute to the improvement of the livelihood of the rural populations depending on them or using them as an additional source of income, a Certification process could be initiated and implemented.

The trade balance of some of these products, like pine nuts, should be studied. In light of the international agreement (intellectual property rights??), the rights of the rural populations producing such products should be preserved.

2. Regulate the non-market uses

Most of the uses and services provided by the forests and OWL are non-marketable. The importance of forests for the conservation of soil and water has long been recognised. Recently, the increasing urbanization and the higher standard of living level of life have generated an important demand on outdoor activities and forest linked recreation. The increasing knowledge about the international issues like pollution and climate change generates a new level of interest, directly linked to the mere existence of the forests.

The demand for forest linked recreation is mainly focused on natural landscapes.

For several reasons the traditional clear cuttings of forests and OWL for the production of charcoal can no longer be accepted. The selective harvesting is more labour consuming and more difficult to apply. This technique is more adapted to the concerns of the modern society, in terms of the impact of the works on the landscape.

In spite of their importance, the economical value of the non-market products and different services is not taken into consideration. Forests need to be managed and maintained. This entails budget and human resources allocation. Peri-urban forests would only be used for the non-market products and services. However they will have to be properly managed, mainly for the prevention of forest fires and for the treatment against undesirable insects (like *Thaumatopea wilkinsonii*) and other pathogens.

The issues of who pays for what, how to pay for a non monetary service and how to compensate for the protection or the conservation of the resources will have to be looked at.

The development of ecotourism and forest related outdoor recreation, whereby consumers are using a given resource without having to pay for this resource, or at least contribute to its conservation and management, is another aspect to be studied.

The valorisation of the protection forests in the watersheds and river basins and other forests where only non-market products and services (conservation of biodiversity, landscape values, heritage values...) is again an issue to be looked at.

3. Grazing, a threat or an opportunity?

After having been for centuries an integral part of the rural system, along with agriculture and forestry, grazing, mainly goat grazing has been considered as one of the major threats to the forests and OWL. The local goats were accused of all the evils and harms that took place in the forests. Many forests and woodlands were protected from

grazing, through decrees issued by the Ministry of Agriculture upon the demand of the owner or the local community.

Grazing takes usually place in different ecosystems. Forests, OWL, high mountains, dry regions, agricultural fields...The impact of this activity varies greatly with the local conditions.

Grazing can be a very useful tool for the management of the different ecosystems especially for reducing fuel and hence fire hazard. It is also an important source of income for the rural populations. However, it can also be very harmful for the forests, and should therefore be handled with care.

The grazing carrying capacity of the different ecosystems is not studied in an extensive way yet. No assessment of the size of the herds and of the quality and quantity of the rangelands has ever been undertaken. The formulation of a rangelands policy should be based on such studies. In the mean time, grazing could be integrated as a management tool and should be controlled to avoid the excess.

4. The abandonment of agriculture

As in most of the Mediterranean countries, agriculture is a very demanding activity with a relatively low rate of return. This is mainly true in mountains where agricultural fields are limited to the man built terraces and to the small home gardens and orchards. It is therefore very difficult to keep mountain agriculture as an economically viable activity, unless it is integrated with other income generating activities in a rural development plan.

The drastic changes that started to take place in the rural society after the two world wars which were expressed in by the abandonment of agricultural fields and terraces and a strong migration towards the cities were not always compensated by the return to some villages during the civil war.

The agricultural practices were abandoned after the world wars because of the low rate of return and because rural people thought that by migrating to the cities they could find better living conditions and better paid jobs. The return to the villages during the civil war was not always accompanied by a return to the traditional agriculture and many abandoned agricultural fields and terraces remained unexploited.

With some exceptions, the forests in Lebanon are usually young as they are occupying and invading ? investing the abandoned agricultural fields and terraces. This is true even for some cedar forests that have covered the terraces surrounding them, like in Hadath el Jobbeh.

The composition of the vegetation in those new forests varies with the vegetation stages. As these new forests are not managed, they become very dense and they accumulate a (useless??) biomass which makes them susceptible to fire, diseases and insect attacks.

The application of some management techniques would increase the interest of those new forests, transform them into productive entities, decrease their susceptibility to fire

and pests and would contribute to the development of the rural economy. Depending on the sites, these management techniques could take the form of pruning and thinning, or even replacing the natural regeneration by more economically interesting species, taking into consideration the environmental and landscaping impacts of such interventions.

II. Rescuing the low and middle altitude woodlands

Surrounded by cities and villages, destroyed by fires, roads, quarries and highways, yet subject to awareness raising and calls for conservation campaigns, the low and middle altitude woodlands require a particular attention.

1. A high demand to be managed

With the growing pressure on the lands to meet the requirements of a growing population, the conflicts on land use are increasing. Forest land is being transformed both for agricultural and urban purposes. Water is becoming scarce and decisions will soon have to be taken on the ways to reduce the consumption. The challenges are hard to meet.

Once playing the role of wood reserve of the cities and villages, where people used to harvest their needs for fuel and construction, the low and middle altitude woodlands do not play an important economical role any longer.

It is only after the removal of the ban on charcoal production that some of these woodlands have recovered a certain interest that remains to be defined.

Grazing has been almost completely abandoned in these woodlands, mainly because of the pressure of the urban society and the misunderstanding of the importance of this activity.

Having no economical importance, the woodlands were abandoned and mismanaged. It is on the low and middle altitude woodlands that most of the urban growth has taken place. The economical value of a built land being by far superior to any other form of land use, it is very difficult to convince the land owners to rescue the remaining woodlands.

The problems that those woodlands are facing are sharpened by two factors:

- Forest Fires: Abandoned and mismanaged, the woodlands accumulate a highly flammable biomass and become subject to frequent and deadly forest fires, mostly caused or induced by man and his activities.
- Fragmentation: Answering the needs of a growing population, the woodlands are subject to several types of encroachment and are transformed into hardly viable islands and woodlots surrounded by cities and villages.

In spite of all the pressure they are subject to, they remain highly important, mainly for the non-market uses and services that they provide. Those peri-urban forests should be

managed and protected for their environmental, landscape, social, tourist and economical value.

2. The Stone Pine plantations

The stone pine (*Pinus pinea*) plantations occupy a great portion of the middle altitude mountains, mainly in South Lebanon and in the Southern part of the Mount-Lebanon where they constitute a good source of income. The structure of these forests makes them also suitable for other uses such as forest recreation and grazing. These forests, planted in the late 1940s, are almost everywhere thought to be natural.

For an optimal production of pine nuts, the trees should be pruned and the forests cleared from any other woody vegetation that would compete with the pines.

As a result of the civil war, many of these plantations were abandoned. Forest fires and insect attacks have and are still damaging them seriously. As this species does not regenerate spontaneously, the abandoned plantations are invaded by the original flora, which gives the sites a natural aspect. Any future reforestation efforts should take into consideration the landscape dimension that is very important for the population. The restoration of this important landscape becomes a priority.

3. Agriculture or forestry?

Agriculture on low and middle altitudes remains viable and still provides a high portion of the Lebanese agricultural products. The efforts to reinforce the agricultural sector are frequently concentrated in these areas (and in the Beqaa valley and other internal plains and plateaux). Any further development of agriculture will certainly be at the expenses of the woodlands; and any further urban growth will be at the expenses of both agricultural fields and orchards and woodlands.

The need for an increase in agricultural production in order to face the negative effects of the open markets policy and the international agreements, and to face an increase in the demands for food and agricultural products, would cause the development of new agricultural fields on the expense of forests, other wooded lands and rangelands. This development would occur at a very high cost, would not necessarily lead to the expected yields and would not meet the expected demands. However, it would certainly lead to a severe decrease in the productivity of the lands, to degradation of the soils and to desertification.

The development of the existing cities to meet the demand of an increase in the migration from rural areas, along with the confirmation of Lebanon as a main tourist destination and the unplanned development of this sector, would occur on the expenses of the remaining peri-urban forests and other wooded lands. This chaotic development would increase the fragmentation of the forests and other wooded lands and would progressively destroy the main assets of Lebanon, the main reason for the tourist development, which are the landscape and the climate.

Equilibrium will have to be established between agriculture and forestry. Low and middle altitude forests will have to confirm their role as peri-urban forests offering panoply of services and other non-market products.

THE WAY AHEAD

One way to approach the development of a national forest and range policy would be the combination of the results of the NFA with scenarios for the future showing some of the evolution possibilities for the forests and the forestry sector. This exercise was undertaken in the framework of the Forest Outlook Study for West and Central Asia (FOWECA) an initiative led by the FAO. The preparation of the outlook paper was undertaken in a participatory approach with the participation of different stakeholders. The scenarios and the priorities could be used to direct the talks dialogue on the forest policy, as they emanate from the visions of the different stakeholders.

Scenario 1: Aggravation and Degradation

- The need for an increase in agricultural production in order to face the negative effects of the open markets policy and the international agreements, and to face an increase in the demands for food and agricultural products, would cause the development of new agricultural fields on the expense of forests, other wooded lands and rangelands. This development would occur at a very high cost, would not necessarily lead to the expected yields and would not meet the expected demands. However, it would certainly lead to a severe decrease in the productivity of the lands, to degradation of the soils and to desertification.
- The aggravation of the economic situation with the reduction of the productivity of the agricultural sector, would lead to an increase in the demand on the existing forests and other wooded lands as sources of fuelwood and on these resources as a source of other basic needs, thus causing the degradation of the resources.
- The development of the existing cities to meet the demand of an increase in the migration from rural areas, along with the confirmation of Lebanon as a main tourist destination and the unplanned development of this sector, would occur on the expenses of the remaining peri-urban forests and other wooded lands. This chaotic development would increase the fragmentation of the forests and other wooded lands and would progressively destroy the main assets of Lebanon, the main reason for the touristic development, which are the landscape and the climate.
- Overgrazing is causing a dramatic degradation of the lands in some parts of the country (Baalback – Hermel), while undergrazing is causing the closing of the woodlands, the loss of biodiversity and an increase in forest fires in some other areas (Mount Lebanon).

- The unplanned development of the tourist sector, of the cities and of the agricultural sector would be accompanied by a loss of interest in forests and forest related activities, which would lead to an increase in the biomass, a closing of the ecosystems and a loss of biodiversity. This would also mean a strong increase in the occurrence of forest fires and a progressive loss of the remaining forests and other wooded lands.
- Finally, the current economic situation and the severe budget restrictions hindering the recruitment of new personnel (guards, technicians and engineers) would lead to the inability of the concerned authorities to properly manage the resources and to apply law enforcement measures in the appropriate way.

Scenario 2: The Status Quo

- The agricultural sector is unable to face the challenges of the international agreements and other arrangements, despite the agricultural strategy that the Ministry of Agriculture has developed and is currently in the implementation phase. This means a loss of interest in the agricultural production and the abandonment of agricultural lands in rural areas, and a continuation of the intensive production in the Beqaa valley and in the coastal plains. The recent development of some crops and some related industries, like the grape vines and the wine industries is certainly giving a great push to the agricultural sector. However the effect of this development on the forests and other wooded lands is not clear yet. The loss of interest in agriculture and the abandonment of agricultural production in some parts of the country is translated by the reinvestment of these lands by forests and other wooded lands.
- The regular growth of cities caused by the demographic growth and the migration from rural areas is at the expense of the forests and other wooded lands.
- The current efforts being put at the different levels for the protection, conservation and management of the ecosystems, along with the strong implication of the civil society and the partnerships created between the different stakeholders are succeeding in the maintenance of a certain equilibrium between the urban chaos and the beauty of the landscape; the illicit harvesting of wood and non wood forest products, the creation of parks and gardens and the reforestation/afforestation efforts.
- The continuation of the multiplicity of efforts and the scattering of the forestry sector between several government and non government authorities with the dramatic lack of cooperation will certainly succeed in a certain increase in the total forest cover of the country. However, these efforts will remain vain, if they are not accompanied by a sustainable management of the resources and a confirmation of the role of the forest in food security, poverty alleviation The cause/ effect in this para is not consistent!!!!

- The lack of interest in the forests and other wooded lands and the banning of grazing and other forms of management is leading, in many parts of the country, mainly in the Mount Lebanon, to the increase in the number of forest fires witnessed in the past few years. If this “no management” policy is continued, it will result in an increase in the number of forest fires.
- The production of pine nuts from the *Pinus pinea* forests remains one of the rare income generating activities related to forests and other wooded lands. It would be affected by the open market strategies, mainly because of the high production costs. The *Pinus pinea* stands are also affected by the uncontrolled urban sprawl, by lack of labour and by the aging of the trees. The continuation of the current situation will result in a progressive lack of interest in the production of pine nuts and a relative reduction of the total surface area of the stands caused by forest fires (*Pinus pinea* does not regenerate spontaneously after fire) and by urban sprawl.
- The Forest Guards, affiliated to the Ministry of Agriculture, are playing a very important role in terms of law enforcement. Along with the engineers, some of them have contributed to the forest and tree resources assessment and inventory. The team is able to carry on the different reporting activities and exercises requested by the FAO and other organizations, agreements and conventions.
- A commendable effort is undertaken by the regional offices of the Ministry of Agriculture in terms of contacts with the local municipalities and community groups to encourage them on the controlled exploitation of the forests and other wooded lands, through grazing and some charcoal production. This initiative is very likely to increase the interest of the local populations for their forests and other wooded lands, therefore making these populations keen on conserving their resources.
- Some research is currently undertaken in research institutes. These research efforts would continue to bring an important input for a better understanding of the different issues related to the forestry sector.
- The overall balance of the current situation is the maintenance of the total surface area covered by forests and other wooded lands and eventually a certain increase in this overall surface area. This balance is achieved thanks to the reinvestment of abandoned unproductive agricultural lands by the forests and thanks to the different reforestation/afforestation and conservation efforts.

Scenario 3: Improvement and Development

- The third scenario will look at the sustainable development and the adoption and implementation of the different strategies and national plans: the Agricultural Strategy, the National Action Programme to Combat Desertification, the “Schéma Directeur d’Aménagement du Territoir Libanais”, and the National Forest Programme. The implementation of these strategies would result in a better

management of the resources and an appropriate resolution of the conflicts on the land use. The optimal approach is the integration of all the different strategies and plans into one global sustainable development programme for the country.

- The implementation of the agricultural strategy would encourage and promote a sustainable production of competitive crops with an added value. It would encourage new investments in agriculture and reduce the rate of migration. This would mean the stabilization or even an increase in the rural population and a valorisation of the agricultural fields.
- The promotion of tourism and ecotourism would on the one hand lead to the creation of niche markets for luxury agricultural products, traditional crops and organically produced crops; and on the other hand it would contribute to the development of a new management approach to the woodlands to enhance their role in the tourism sector.
- Grazing is managed in a very sustainable way, with the participation of the shepherds in the decision making process, thus contributing to the conservation of the ecosystems and the promotion of the traditional management. In addition to the income generated by the livestock production, the rental of the lands for grazing constitutes a good source of income for the municipalities.
- Keeping the criteria and indicators of sustainable forest management as the major reference, different management systems would be proposed to the different forests and other wooded lands, based on the vocations and on the objectives. The multiple functionality of these woodlands would always serve as a base line for the management plans. Focus would be put on the protection from forest fires, conservation of biodiversity and food security.
- The relatively high level of fragmentation of the forests and other wooded lands would be reduced by the creation of natural corridors through reforestation/afforestation. This implies a thorough analysis of the lands and a very close cooperation between the different authorities.
- The role of the forest guards would be strengthened and broadened, as they would be involved in extension services, in ecotourism and in forest education as much as they would be trained on the new technologies applied to forest management. The forestry department would play a confirmed role in the different aspects related to forest management, forest development and conservation. A forestry and natural resources training centre would be established and opened to all concerned stakeholders and would build the capacities of these stakeholders.
- More efforts would be put on applied research, and a forestry research institute would be created, essential with forestry courses.

- Meeting the requirements of the different conventions and agreements would not be an objective in by itself, but rather the result of the sustainable management being applied at all levels.
- This scenario means being able to find an equilibrium between the *hortus*, the *ager*, the *silva* and the *saltus*, or the agro-silvo-pastoral system, to which modern dimensions are added, tourism, rural industries and other social and environmental services.
- This scenario may not lead to a drastic increase in the total forest cover of the country as it would imply the integrated management of the resources, in terms of agriculture, tourism, forestry, small industries and range management. It would not exclude the development of the cities but would rather allow this development on specific sites.

5. Priorities and strategies for forest and forestry to the year 2020

The sustainable management of the woodlands (forests and other wooded lands) is a challenge for the future. These woodlands are essential for the protection of soils, water and biodiversity. They are sources of wood, non-wood forest products and rangelands for the rural population. They answer the need for nature of the urban population. They play a very important role in the development of the economy and the tourism sector of Lebanon. Although the future cannot be predicted, with the way future generations will be looking at the woodlands, it is assumed that the conservation of these important ecosystems will contribute to the well being and food security of these future generations.

This integrated management would result in the encouragement of the multiple functionalities of the rural space which would result in:

- The reduction of migration from rural areas
- The reduction in the abandonment of agricultural land
- The reduction in the reinvestment of forests on these abandoned lands
- The encouragement of new initiatives and activities linked to woodlands, like ecotourism and outdoor activities
- A marked contribution of the forestry sector in poverty alleviation and food security.

In order to operate the paradigm change aimed at in the third scenario, it is important to adopt a strategic approach to the forestry sector, over the next 15 years. This strategy would look at the following issues:

A. A Mediterranean approach to Ecosystem-based Management

Different techniques were developed over time to face the challenges and constraints imposed by and on the Mediterranean forests and other wooded lands (reforestation, erosion control, forest fire fighting, range improvement...). These techniques will also

need to evolve with the evolution of the society and the emergence of new needs; new techniques would eventually be introduced. Taking into consideration the challenges and the constraints of the Mediterranean forests and OWL, manage the forests using an ecosystem-based approach that maintains forest health, structure, functions, composition and biodiversity, and includes, but is not limited to:

- Using integrated land-use planning
- Maintaining natural forested and wooded ecosystems
- Implementing a system of representative protected areas
- Contributing to the international efforts to reduce greenhouse gases through managing the forest and OWL to be a net Carbon sink
- Conserving threatened ecosystems, specimen trees and monument forests

Actions to be undertaken:

- Develop a National Forest Program in close collaboration with all the concerned government and non-government stakeholders, taking into account all the values of the woodlands, monetary and non monetary, all the expectations and all the challenges.
- Move from the concepts of protecting species to the concepts of protecting ecosystems (the protection of conifers is not viable in light of the increasing demand on wood; many ecosystems will need to be protected and preserved)
- Develop and implement a national reforestation program, based on the results of the NFA, the derived forest map and other useful tools
- Develop, rehabilitate and increase the production capacity of the nurseries of the MOA
- Use the information provided through the NFA for the implementation of a national forest plan, including sustainable forest management.
- Identify areas to be reforested/afforested through the combination between the forest map and cadastre maps and through the use of other useful tools.
- Define public lands suitable for reforestation
- Implement natural corridors to reduce the level of fragmentation of the forests and other wooded lands.
- Adopt the forest landscape restoration approach
- Develop a forest fire management policy (including pre and post fire management)
- Integrate watershed-based management and wildlife (including birds) conservation into forest management practices
- Incorporate the commitments towards the Kyoto Protocol and other international instruments into forest management planning.
- Reforest burnt areas when necessary and use afforestation to mitigate the loss of forests.
- Initiate a network of representative protected areas
- Adopt the Integrated Pest Management approach to fight or control the forest pests and diseases

- Implement a system for the harvest of wood from forests affected by fire, pests and diseases
- Assess and evaluate and manage specimen trees and monument forests
- Assess, protect and manage sacred forests

B. Sustainable Forest and Rural Communities

Develop legislation and policies to contribute to the improvement of the sustainability (social, environmental and economic) of rural populations, partially or totally depending on forests by:

- Fostering participation and involvement in forest management decision making
- Improving access to resources
- Enhancing multiple benefits
- Improving the livelihood and contributing to poverty alleviation
- Restoring the relationship between the forests and the neighbouring communities.

Actions to be undertaken

- Develop and adapt forest legislation and policies to strengthen the involvement of rural communities in sustainable forest management decision making and implementation
- Establish a process led by the Heads of Service of Rural Development and Natural Resources in the regional offices of the Ministry of Agriculture, and involving local community groups, municipalities, forest users and other concerned stakeholders to develop local or regional forest management plans, defining the different land uses options and including all the forest benefits.
- Encourage forest plantations on abandoned lands to reduce the overexploitation of the natural resources caused by poverty and by the satisfaction of immediate needs. This would not only provide the necessary wood for the rural population, but also reduce the stress on natural forests and contribute to combating desertification. These planted forests would also constitute a source of wood for the less needy population (barbecues, chimneys, ...).
- Define the potential of the forest to be managed, for wood, non-wood forest products and other forms of exploitation, like ecotourism and valuable and non-valuable benefits (soil and water conservation, recreational uses...)
- Tailor reforestation plans for different private stakeholders mainly in rural areas
- Enforce the forest law and implement the reforestation certificates (allowing the harvesting of wood from the planted forest, at maturity)
- Strengthen the community-based tenure system (waqf, mach'a...) to increase the benefits to the rural communities
- Support capacity building in local communities for a more better participation in forests and OWL management

- Develop a system for the valorisation of the woodlands through non market values and services offered (landscape, biodiversity, leisure, carbon sequestration...).
- Develop and encourage ecotourism and outdoor activities that would bring a substantive financial contribution to the local population and would allow for a better conservation of the ecosystems.
- Incorporate traditional knowledge in managing forest lands and resources in accordance with the Convention on Biological Diversity
- Implement institutional arrangements between rural communities, shepherds and other forest related groups that reflect a spirit of sharing responsibilities and benefits for the management, conservation and sustainable use of forests, OWL and rangelands.

C. Forest Products and Benefits

Stimulate the diversification of markets, forest products and services and benefits (both timber and non-timber) by:

- Understanding current and emerging markets and developing new domestic and international markets
- Promoting value-added and best end-use through expanded research and design
- Attracting manufacturers of finished products
- Promoting markets for forest environmental services

Actions to be undertaken

- Create and maintain policies and programmes that encourage human capacity, investment, productivity, innovation and competitiveness in:
 - Potential value-added timber industries
 - Non-wood forest products and service-based industries, such as tourism and recreation and wildfoods
 - Specialty forest products and services: aromatic and medicinal plants, ethno-botanicals, water regeneration...
- Create and maintain policies and programs that encourage, develop and maintain access to markets for value-added timber and NWFP based industries; promote Lebanese forest products.
- Develop strategies for domestic and export markets
- Develop value-added industries and programs to support creativity and innovation
- Remove policy barriers and encourage the greater use of renewable forest products to improve resource and energy efficiency

Examples of products that could be encouraged:

- High quality pine nuts
- Carob molasses
- Wild foods
- Wild honey
- Liquors and spirituals

- High quality handicrafts from cedar wood
- High quality veneer from cedar or juniper wood
- Traditional carpets from lambs wool
- Laurel oil and products
- Cedar seedlings
- Ecotourism and outdoor activities
- Health tourism and health cures

D. Knowledge, Education and Capacity Building for Sustainability

Maintain and enhance the skills and knowledge of forest and natural resources practitioners at all levels (engineers, forest guards, NGO's, private sector, municipalities...) by:

- Developing the capacity of forest and natural resources practitioners to use efficiently and effectively new technologies, tools and techniques
- Developing technical and post-secondary education to meet the requirements of sustainable forest and other natural resources management
- Creating the necessary processes to bring new and traditional knowledge and ideas to policy evolution, decision making and field practices
- Informing investors about opportunities for investment in the forestry sector for the development of forest products and services

Actions to be undertaken

- Develop a framework to use traditional knowledge along with current scientific knowledge and to protect intellectual property rights of rural communities
- Develop strategies for improving the forestry sector using research and development, research, extension and education
- Develop and implement focused education and training for forest and natural resources practitioners (both private and public) through:
 - Creation of a forestry and natural resources line in terms of education at the different levels (technical and academic)
 - Extension services
 - Pilot projects and outdoor classrooms
 - Continuing education
- Promote and support scientific research and forestry applied research.
- Collaborate with universities and other research institutions for the development of research works on issues like: carbon and biomass estimates; growth models...
- Provide a continuous training system for NFA through the regular measurement of additional tracts.
- Use NFA methodology to study fodder species, include range species in next NFA exercise or develop a different methodology if necessary.
- Develop and implement a proper awareness raising strategy dealing with:
 - Importance of forests/owl/ToF/rangelands...

- Laws
- Publications
- Promotion of partnership and cooperation between government and citizens
- Strengthen the bonds between forest practitioners, decision makers and academia to communicate needs, requirements, new technologies...

In this regard it would be interesting to note the following:

- The creation of a forest research institute will bring a substantive contribution to the development and the positive evolution of the forestry sector.
- The creation of a forest and natural resources training centre would greatly contribute to the capacity building of all the concerned government and non-government stakeholders and forest practitioners.

E. The Urban and Peri-Urban Forests and the Public Gardens Contributing to Sustainability

Actively get engaged in sustaining the diversity of benefits underlying the importance of the Lebanese forests and OWL by:

- Establishing mechanisms to advance the conservation, management, planning and maintenance of urban and peri-urban forests based on an ecosystem-based approach
- Enhancing communication and outreach programs
- Implementing a network of public gardens and urban parks focusing on their role in the sustainable development

Action to be undertaken:

- Develop and implement a national urban and peri-urban forestry strategy
- Develop guidelines and support tools to help municipalities maintain and enhance their urban and peri-urban forests and public gardens
- Develop guidelines and support tools to protect the surrounding forests and watersheds from urban pollution
- Establish research priorities for urban forestry and explore funding mechanisms to implement these priorities
- Develop and implement a communication strategy to inform the public about how the forest contributes to their quality of life
- Develop educational initiatives and programs that will inform youth about forest stewardship and engage them in local forest stewardship programs
- Identify unique and threatened habitats and sacred sites in and near towns and villages and develop and implement strategies to ensure their conservation
- Encourage nurseries to produce native species to be used for public gardens and urban forestry

- Implement public gardens and parks for their importance in local sustainable development and in strengthening the social bonds
- Contribute to the management and conservation of monument trees on public and private lands

F. Private Owners and Sustainability

Increase the economic, social and environmental contribution by private forests and woodlots owners to the society through a concerted effort by stakeholders to strengthen policies and services that encourage and support viable forests and woodlots businesses.

Actions to be undertaken:

- Identify and remove obstacles hindering sustainable development with particular attention to market incentives, silvicultural programs and tax policies
- Build the capacities of private owners by creating extension programs
- Develop and implement incentives for the provision of environmental services from private woodlots and forests
- Hold a private forests and woodlots owners' National Forum for the dissemination and discussion of laws and legislations, for the design and implementation of policies, incentives and programs in the following areas:
 - Extension, training and technology transfer
 - Taxation (income, property)
 - Forest renewal and regeneration
 - Forest fires
 - Environmental services
 - Certification (if agreed upon, mainly for NWFP)
 - Fairness in access to market
 - Carbon pooling
- Encourage all forest and agroforestry activities aiming at improving the state of forests and OWL.

G. Law Amendment and Enforcement

In light of all the above mentioned objectives and activities, review, amend and update the forest legislation, and create new laws and legislations mainly with regards to tax policies, incentives, environmental services, carbon sequestration, intellectual property rights and other new issues and international commitments; enforce and empower the authorities in charge of the forests, OWL and rangelands.

Actions to be undertaken;

- Develop a link between forest and rangeland policies, or a common forest and range policy.
- Provide necessary funds and staff to secure the periodical conduction of NFA (every 5 years) and data maintenance
- Develop a framework legislation for protected areas.

- Make a distinction between forest legislation and the protected areas legislation, and define the protection levels.
- Review and amend the existing forest law
- Move from the concept of forest police to that of forest guides
- Find a sustainable solution for the overlapping functions between the ministry of agriculture and the ministry of environment (a new forest agency could be one solution)
- Strengthen the role of the regional services of rural development and natural resources (in the mohafazats) in terms of forest management, forest policy...
- Enforce the law taking into consideration the results of the NFA.
- Develop appropriate legislative amendments

The protection and conservation of forests and ecosystems induces consequences on the land owners and users. The laws and legislations that govern the protection and conservation measures impose controlled exploitation or sometimes forbid exploitation. While these legislations contribute to the protection of these ecosystems and have a positive effect on the natural resources in Lebanon, they may have direct consequences on the food security and on the income of the owners and users. Economical and compensational measures will have to be studied and applied in order to insure the sustainability of the legislation. It is important to note that the National Forest Program should go hand in hand with programs focusing on poverty alleviation and food security.

H. Administrative Reform

Develop and implement a new administrative system, or provide the current system with the necessary flexibility to adapt to changes and to the requirements of the policy.

- Implementing decentralization progressively (or at least administrative deconcentration) for a better and more efficient participatory approach to forests and OWL management.
- Implementing policies, legislations and management options in partnership with the local community groups and other members of the civil society.
- Adopting and implementing modern multidisciplinary management tools. These management options or tools are those combining protection, production, conservation, involvement of local populations, exploitation and traditional and modern uses. These tools would be implemented through: the Regional Parks, the Biosphere Reserves (UNESCO), the Forest Landscape Restoration (IUCN), the Model Forests (Canadian Model Forests Network).
- Strengthening the integration and collaboration of all planning authorities (tourism, environment, public works, water, agriculture...) for a better management and development of the resources and the reduction of the negative impacts, like fragmentation.
- Developing economical tools aiming at a better valorisation of the resources. The reactivation of the reforestation fund would bring a major contribution to that effect and would encourage several forest related

activities. A financial tool would be developed for the reimbursement of land protected for some specific purposes and no longer exploitable by the owners.

- Creating and implementing an independent forest office, for a better management of the forests and other wooded lands a better integration of the concerns of all government and non-government stakeholders.

Actions to be undertaken:

- Study the different available options and compare them with the current system
- Build the capacities of the current staff for a stronger involvement in management of local forests and OWL
- Recruit new staff
- Establish contacts with concerned authorities, mainly the Ministry of Finance to study the different financial options and their implications
- Develop the occupational profile of the forest guards
- Strengthen the role of the regional offices
- Create an independent forest office directly linked to all the concerned ministries and working in close collaboration with those ministries. This office or authority would be in charge of:
 - The implementation of all the treaties, agreements and conventions
 - The development and implementation of forest policies and strategies
 - The development and implementation of the national forest program
 - The conservation of forest ecosystems and biodiversity
 - The management of Protected Areas
 - The assessment, evaluation and monitoring of the trees and forest resources
 - The training and capacity building of all the stakeholders dealing with forestry issues,
 - The reforestation and afforestation and other tree planting activities
 - The management and conservation of the rangelands
 - The encouragement of ecotourism and forest related tourist and outdoor activities
 - The encouragement of the development of non-wood forest products
 - The management of watersheds
 - All other forest related activities

I. Reporting and Accountability

Create a comprehensive national forest reporting system that consolidates data, information and knowledge for all features of the forest, both urban and rural, other wooded lands, trees outside forests and land use change through:

- Disseminating the results of the first forests and tree resources assessment

- Ensuring the necessary funds and personnel for a regular reporting exercise
- Broadening the information gathered to cover the needs of the different reporting exercises
- Building upon the existing system to gather information related to land degradation
- Building upon the existing system to gather information related to rangelands, or developing a new system.

Actions to be undertaken:

- Establish capacity for credible and authoritative reporting to the public on:
 - How management practices incorporate multiple values
 - Criteria and indicators of sustainable forest management
 - Local communities involvement in the forest sector
 - Honouring international commitments such as those under the CBD, UNCCD, FCCC
 - Actions pursuant to recommendations of the Intergovernmental Panel on Forests and the United Nations Forum on Forests and other forest-related international meetings
- Assess socio-economic impact analysis of policy and management options
- Strengthen and empower the forest inventory system to create a publicly accessible forest information system that provides high-quality information on the status of the forests, OWL and trees outside forests
- Enhance a program to monitor and inform public about forest fires and forest pests.

J. Some Particular Issues

In addition to the general objectives of the forest policy and strategy, the following issues need to be addressed directly and immediately. Some other issues may also arise and should be dealt with in the most appropriate manner.

- Forest Fires:
 - Pre fire management, by clearing the understory and pruning the trees
 - Control towers
 - Awareness raising at local level
 - Prevention at different levels (roads, reservoirs, fire breaks...)
 - Grazing as a tool for prevention
 - Forest exploitation as a tool for prevention
 - Legislation, mainly regarding conifers
 - Post-fire management
 - Application of fire risk map
 - Identification of risk periods
 - Law enforcement
 - Defining relation-ship with other stakeholders

- Organizing fight (aerial methods...)
- Creating a unit between concerned stakeholders
- Nurseries
 - Rehabilitation of existing nurseries (including operational management)
 - Application of modern technologies for nurseries
 - Capacity building
 - Vocation of nurseries
 - Seed collection
 - Seed provenance
 - Follow-up of seedlings
 - Planning of production and distribution according to demand (priority given to reforestation/afforestation, then to distribution)
- Ecotourism
 - Encouraging ecotourism as an income generating activity
 - Organizing ecotourism to allow local communities to benefit of the income
 - Capacity building of forest guards
 - Occupational profile
 - Definition of forests with potential for ecotourism
 - Definition of role of MOA in ecotourism
 - Exploit and develop ecotourism on public lands
 - Capacity building at local level for income generating activities (gender equilibrium)
 - Labeling
- Reforestation/afforestation
 - Development of corridors to reduce fragmentation
 - Identification of potential sites
 - Link with rangeland management
 - Coordinate with MOE and other stakeholders
 - Conservation of genetic resources

K. Partnership

Strengthen existing partnerships and build new agreements, both at the local and international levels, for an optimal management of the forests and OWL, and for the implementation of the policy and strategy.