

United Nations Environment Programme

Terminal Evaluation of the UNEP/GEF project GF/2010-03-16 (4731)

“Development of an Action Plan for Integrated Management of Forests and Assessment of Insect Infestation in Cedar Forests in the Mediterranean Region and with Particular Emphasis on the Tannourine-Hadath El-Jebbeh Cedars Forest.”

Fady R. Asmar

Evaluation and Oversight Unit

September 2008

TABLE OF CONTENTS

1. EXECUTIVE SUMMARY	4
2. INTRODUCTION AND BACKGROUND	8
3. SCOPE OBJECTIVES AND METHODS	12
4. PROJECT PERFORMANCE AND IMPACT	14
A. ATTAINMENT OF OBJECTIVES AND PLANNED RESULTS	14
B. SUSTAINABILITY	17
C. ACHIEVEMENT OF OUTPUTS AND ACTIVITIES	21
D. CATALYTIC ROLE.....	30
E. ASSESSMENT MONITORING AND EVALUATION SYSTEMS.	30
F. PREPARATION AND READINESS	31
G. COUNTRY OWNERSHIP / DRIVENESS	32
H. STAKEHOLDER PARTICIPATION / PUBLIC AWARENESS	32
I. FINANCIAL PLANNING	33
J. IMPLEMENTATION APPROACH	34
K. UNEP SUPERVISION AND BACKSTOPPING	34
5. CONCLUSION AND RATINGS	35
6. LESSONS LEARNED	43
7. RECOMMENDATIONS	44
8. ANNEXES	44
ANNEX 1: TERMS OF REFERENCE	45
ANNEX 5 LIST OF INTENDED ADDITIONAL RECIPIENTS FOR THE TERMINAL EVALUATION (TO BE COMPLETED BY THE IA TASK MANAGER).....	63
ANNEX 2: PROJECT LOG FRAME.....	64
ANNEX 3: LIST OF INTERVIEWEES AND FEEDBACKS RECEIVED	79
ANNEX 4	88
ANNEX 5: LIST OF DOCUMENTS CONSULTED.....	88
ANNEX 6: EXPERTISE OF THE EVALUATOR.....	89
PERSONAL INFORMATION	94

LIST OF ACRONYMS

AUB	American University of Beirut
CEDRE	Coopération pour l’Evaluation et le Développement de la Recherche
FAO	Food and Agriculture Organisation
FFEM	Fonds Français pour l’Environnement Mondial
GEF	Global Environment Fund
GIS	Geographic Information System
GPS	Global Position System
INRA	Institut National de la Recherche Agronomique
IPM	Integrated Pest Management
LARI	Lebanese Agricultural Research Institute
M&E	Monitoring and Evaluation
METT	Monitoring and Evaluation Tracking Tools
MOA	Ministry of Agriculture
MOE	Ministry of Environment
NCSR (L)	National Centre for Scientific Research (Lebanese)
NGO	Non-Governmental Organisation
PA	Protected Area
SMART	Specific, Manageable, Achievable and Attributable, Relevant and Realistic, Time-bound, Timely, Trackable and Targeted
TCFNC	Tannourine Cedar Forest National Committee
UNEP	United Nations Environment Programme
USAID	United States Assistance for International Development

1. EXECUTIVE SUMMARY

The project duration was initially 36 months starting July 2004 and completing in June 2007, which was later revised and extended to be completed in December 2007. Some activities were undertaken during the summer of 2008.

The project had five components:

- 1) Development of an action plan for integrated sustainable management of cedar forests in the region using the Tannourine forest as a case example and addressing various threats to the forest ecosystem;
- 2) The Action Plan was to take into account the unique situation to this area which includes pest infestation of Cedar forests. Thus, the project would foresee the incremental activities that would complement the ongoing studies in Lebanon on *Cephalcia* and that were adaptable to the rest of the region;
- 3) Assessment of the level of risk from *Cephalcia* in the Mediterranean cedar forests;
- 4) Promotion of the use of new monitoring tools in detecting insect outbreak and developing and utilizing alternative methods for the control of *Cephalcia* to replace compounds that are not environmentally friendly;
- 5) Increase in the institutional and community knowledge exchange, education and capacity building for the management of cedar forests.

The total budget of the project was US\$ 1,362,200 with US\$ 530,500 funded by the GEF Trust Fund and in-kind co-funding from the participating countries US\$ 226,700, FAO US\$ 150,000, CEDRE project US\$ 30,000, LNCSR Project US\$10,500, Lebanese Government US\$ 324,000, and the private sector US\$ 95,500. The total cost also included US\$ 25,000 in PDF-A costs.

The evaluation has focused on the following main questions:

Has the project:

- Developed a sustainable management plan that addresses possible threats to the ecosystem of cedar forests and means of removal of these threats?
- Defined the causes of *Cephalcia* outbreak in Tannourine and assessed the possible threats of similar outbreaks in cedar forests in the Mediterranean region?
- Developed institutional and community knowledge and capacity for the management of cedar forests?

The project had the following main achievements:

- The development of a sustainable management plan for the Tannourine Reserve to achieve a high level of protection, conservation, rehabilitation and management of biodiversity, habitats and natural processes to complement the ongoing work on controlling the insect pest. The plan was completed and approved by the Project team and the Lebanese Ministry of Environment in a workshop held in Tannourine on May 12, 2007. The plan was also translated to Arabic for a better efficiency at the local stakeholders' level.

- Building the capacities of various groups through workshops and training courses. The different reports prepared by the project team state that seven workshops and training courses were conducted in Tannourine between May and October 2007. A total of 108 persons were involved in these activities, either as participants or trainees. One additional training workshop was organized in August 2008 for representatives from the different cedar forests in Lebanon, on the use of pheromones to monitor insect populations in cedar forests.
- Studying the possible causes of *Cephalcia* outbreak with special emphasis on weather and environmental factors. The reports provided by the project team confirm that the various factors that caused the *Cephalcia* outbreak in Lebanon were identified. This information was shared with the scientists who have participated in the project in Algeria, Cyprus, Morocco and Turkey. The reports describe the existence of a correlation between the effect of soil temperature and humidity on the life cycle of *Cephalcia*. This seems to be a significant finding on the possible causes of the outbreak of *Cephalcia* in Tannourine and not in other forests. This finding was reconfirmed by further data collection in Tannourine and other forests.
- Establishment of a GIS database of the Tannourine Cedar Forest Nature Reserve for use in regular monitoring of all changes occurring in the reserve. The description of soil profiles and analysis of soil samples in TCFNR was completed in 2006. A total of 26 profiles in the reserve were described and soil analyses were completed. A soil map of the Reserve was also produced. The information was fed into the GIS database of the TCFNR. The GIS data base is a very essential and important monitoring tool to be used for the management of the site.
- Coordinating the activities between Lebanon and the other countries involved in the project on assessment of risk from *Cephalcia* attack of cedar forests. Coordination with the scientists participating in the project in Algeria, Cyprus, Morocco and Turkey has been ongoing since the start and was specially enhanced through the coordination meetings in Lebanon and the workshops conducted in the four countries.
- Undertaking a thorough survey of all cedar forests in the Mediterranean region for *Cephalcia* and its natural enemies and implementing actions in forests already under the threat from the pest. The surveys that were carried in Algeria, Morocco, Cyprus and Turkey by the project team and scientists from the four participating countries have shown that the *Cephalcia* is not present in any of the surveyed forests. Insect surveys in cedar forests in Lebanon have shown that *Cephalcia* is only found in the Tannourine and Bcharreh forests and has not spread to other regions.
- Extracting the *Cephalcia* pheromone and determining its chemical composition and exploring the possibility of synthesizing it for possible use in monitoring and controlling the insect. The reports provided confirm that the composition of *Cephalcia* pheromones was elucidated using gas chromatography/mass spectroscopy. Synthesis of the pheromones was also undertaken and tested in the Tannourine forest in May 2007. The new monitoring technique developed with the use of the pheromone has contributed to an improvement of the monitoring methods which were previously labour-intensive and time-consuming. This will lead to a faster detection of the outbreaks and a more efficient and proactive decisions regarding the interventions to be undertaken.

- Developing alternative methods of insect pest control including the search for natural enemies of *Cephalcia* and the possible implementation of an IPM program. Most of the work in developing alternative methods of *Cephalcia* control was on the use of *Beauvaria* species. Testing the efficacy of this fungus for controlling *Cephalcia* larvae under laboratory conditions showed promising results. The fungus will have to be tested in the forest under natural conditions in order to confirm its efficiency. In severe outbreaks, natural enemies may not be very efficient in controlling *Cephalcia* population, and an Integrated Pest Management program could be more feasible. This fact cannot be confirmed currently, as long as the population of the insect is below the danger line.
- Carrying out activities to build a team of professionals specialized in forest entomology, ecology, biodiversity and related fields by granting fellowships for Masters Degrees in these specializations. The project budget supported four graduate students, three of which have studied at the American University of Beirut while the fourth student, the Head of Department of the Conservation of Natural Wealth in the MOE, studied at the St. Joseph University. The project reports mention that project has achieved a good scientific output including: Two papers published in refereed journals, three abstracts of papers presented at international scientific meetings, four Masters Thesis, and three memoires resulting from the research project carried out by three students at the Lebanese University.
- Carrying out activities to train various target groups on invasive species control, forest management, flora and fauna monitoring and the use of GIS and GPS in this field and resource mobilization. These activities have proved to be very fruitful in terms of increasing awareness among local community and particularly students.
- Carrying out public awareness initiatives about the importance of forests and biodiversity by preparing information material. A variety of information materials were prepared for wide distribution. These include: A DVD documentary on the Project and the TCFNR; Ten different publications about the project and the TCFNR; A new website for the TCFNR www.arztannourine.org. E-mail address: info@arztannourine.org

Some findings

- The outbreak of the *Cephalcia tannourinensis* may have been caused by a change in the local climatic conditions (high temperature, low soil humidity). Current changes in climatic conditions at the global level, might lead to the outbreak of new pests and diseases in different ecosystems.
- The *Cephalcia tannourinensis* was not found in any of the countries in the region; in Lebanon it was only found in one cedar stand, in Becharre, in addition to Tannourine-Hadath el Jebbeh.
- Ecotourism should not be considered as the main income generating activity for the local community groups, as it is directly affected by the political instability in the country and in the region.

Summary table of the evaluator's ratings

The following rating system is applied:

HS	= Highly Satisfactory
S	= Satisfactory
MS	= Moderately Satisfactory

- MU = Moderately Unsatisfactory
 U = Unsatisfactory
 HU = Highly Unsatisfactory
 L = Likely
 ML = Moderately Likely

CRITERION	EVALUATOR'S RATING
A. ATTAINMENT OF PROJECT OBJECTIVES AND RESULTS (OVERALL RATING) SUB CRITERIA (BELOW)	HS
A. 1. EFFECTIVENESS	HS
A. 2. RELEVANCE	HS
A. 3. EFFICIENCY	HS
B. SUSTAINABILITY OF PROJECT OUTCOMES (OVERALL RATING) SUB CRITERIA (BELOW)	ML
B. 1. FINANCIAL	ML
B. 2. SOCIO POLITICAL	L
B. 3. INSTITUTIONAL FRAMEWORK AND GOVERNANCE	ML
B. 4. ECOLOGICAL (ENVIRONMENTAL)	L
C. ACHIEVEMENT OF OUTPUTS AND ACTIVITIES	HS
D. MONITORING AND EVALUATION (OVERALL RATING) SUB CRITERIA (BELOW)	S
D. 1. M&E DESIGN	S
D. 2. M&E PLAN IMPLEMENTATION (USE FOR ADAPTIVE MANAGEMENT)	S
D. 3. BUDGETING AND FUNDING FOR M&E ACTIVITIES	S
E. CATALYTIC ROLE	HS
F. PREPARATION AND READINESS	S
G. COUNTRY OWNERSHIP / DRIVENNESS	HS
H. STAKEHOLDERS INVOLVEMENT/PUBLIC AWARENESS	S
I. FINANCIAL PLANNING	S
J. IMPLEMENTATION APPROACH	HS

CRITERION	EVALUATOR'S RATING
K. UNEP SUPERVISION AND BACKSTOPPING	HS
OVERALL RATING	S - HS

Recommendations:

- Investigations should be carried on the effect of land use change on the outbreak of the *Cephalcia tannourinensis*. The land has long been used for local forestry activities, goat grazing, agriculture and small industry. The changes in life styles, the increasing environmental concerns and the low income generated by those activities, have led to a drastic change in the local land use practices. This change in the land use could be an additional cause of the outbreak of the insect. Dendrochronology could be used to analyse the different stresses caused on the forest in the past years. Tree ring analysis could be an interesting tool to study the history of the forest and to forecast any recurring event. The investigations and the dendrochronological studies should be undertaken by the scientific institution (AUB for example) in close collaboration with the Ministry of Environment and the Tannourine committee. This work should be initiated as soon as the necessary funding is available.
- Training local women groups on food processing and home based food industries, should be broadened to cover new products and to increase the range of products sold on the local market. This activity should be initiated by the Tannourine committee, or by the local women groups themselves. It should be carried out periodically, according to the needs of the women groups. The organisation who has provided the first training could be asked to undertake further trainings, but other organisation could also be identified
- The awareness raising material should be distributed in a more efficient manner. The MOE should distribute the DVDs and other material produced to all universities and relevant faculties, to all concerned ministries and departments within ministries and to all concerned NGOs. Awareness lectures should be organised in all universities. These activities could be carried out before the summer of 2009 at no cost.
- The students trained in the framework of the project, who became junior experts in their field, should be better integrated in related structures or organizations in order to benefit of their acquired expertise in the most efficient way. Unfortunately, this recommendation may not be possible to achieve because of the current freeze in the civil service system in Lebanon. However, the trained experts could be invited to apply to certain positions whenever there are project vacancies in any of the concerned institutions or organisations.

2. INTRODUCTION AND BACKGROUND

The terminal evaluation of this project was planned to take place between June 16th and July 23rd 2008. Upon the suggestion of the Ministry of Environment and after the approval of the evaluation officer, the evaluation was delayed till mid September, in order to include some of the activities that were undertaken after the end of the project, in August and September 2008.

The evaluation was conducted through desk work, field visits to the Tannourine Cedar Forest Reserve, meetings with key stakeholders, telephone interviews and email exchanges.

Project rationale

Cedar forests in the Mediterranean cover an area of about 2,700 km². This is approximately 3% of forests in the entire Mediterranean sub region of which about 2% are protected. There are four species of native cedars in the world: *Cedrus libani* A. Rich in Lebanon, Syria and Turkey; *Cedrus brevifolia* Henry in Cyprus; *Cedrus atlantica* Manetti in Morocco and Algeria; *Cedrus deodora* Loud. in Afghanistan and India. They are distributed as follows: *Cedrus libani* found in Lebanon (2,200 hectares), Syria (400 hectares) and Turkey (100,000 hectares); *Cedrus brevifolia* found in Cyprus (810 hectares); *Cedrus atlantica* found in Morocco (140,000 hectares) and Algeria (27,000 hectares); and *Cedrus deodora* found in the Himalayas (500,000 hectares). These figures do not include the approximately 300,000 hectares of cedars that have been reforested during the last 50 years. Thus, more than half of the cedar forests (natural and reforested) occur in the Mediterranean region.

There are 12 surviving stands of cedar forests in Lebanon. Some of these stands are in a healthy state while others are suffering from neglect, lack of appropriate management and a variety of insect pests. The cedar forest of Tannourine-Hadath El-Jebbeh is the largest contiguous cedar forest in Lebanon that is left from what used to cover the Lebanese western mountain chain and known under the name of "great cedar forest". The total area of this forest is about 600 hectares. Out of this, approximately 150 hectares are public property and were set as the Tannourine Cedar Forest Nature Reserve (TCFNR), while the rest of the forest is privately owned, mainly by the church and municipalities.

During the Lebanese war (1975-1990) land mines were spread in some parts of the Tannourine forest, making it mostly inaccessible by the local communities and their herds. Prior to the starting of the project, the Lebanese Army has inspected the Reserve for mines and informed the Committee in writing that it was free of mines. The Lebanese Army has expressed its willingness to clear the lands from the remaining mines at a later stage.

Specifically, the cedar forest of Tannourine-Hadath El-Jebbeh is situated in the northern part of Lebanon and is bordered from the North by Beni Saab Farm, from the West by Niha-Kfour, from the South, Tannourine and from the East by Siar Mountain. It is the largest natural cedar forest in the country. Preliminary studies indicate that it is one of the richest forests in biodiversity in the region.

Usually, the cedars in Lebanon grow on calcareous rocks with shallow soil. The cedars in Tannourine are an exception; they grow on sandy and volcanic soils in addition to calcareous soils. The majority of the trees in this forest are cedars, accompanied by a rich flora.

All through the ages the Tannourine forest, along with all the cedar forests in Lebanon, has been extensively used for different purposes. They were the main sources of timber for several industries and sources of wood and non-wood products. Terraces within and around the forest are a witness of past agricultural activities. Two gypsum kilns within the reserve prove the existence of a small forest based industry in the past. Grazing is known to have always been part of the activities in all the rural and mountain areas of the country. All these forest based activities had progressively been interrupted until the establishment of the forest as a nature reserve, thus banning all activities.

The cedar forests of Lebanon, which used to be more widespread, have dwindled owing to a lack of adequate management, illegal cutting of trees, and over grazing. In recent years, a serious new threat has arisen in the Tannourine forest, namely the infestation by a new insect of the genus *Cephalcia*. The infestation is affecting about 70% of the forest. The major concern amongst the scientific community is its rapid spread. The pest was spreading and threatening other cedar forests. It has already started to attack the nearby famous “Forest of the Cedars of God” (Horsh Arz El-Rab) in Bcharreh, further to the North. There was a concern that it would continue to spread and subsequently reach the other cedar forests in Lebanon and the Mediterranean region.

After an extended study of the biology of *Cephalcia* in the Tannourine forest and spraying with an insect growth regulator for four consecutive years (with the support of the Ministry of Agriculture, the Lebanese Army and FAO), the conclusion was made that in the absence of any intervention against this pest, its population would increase rapidly to an outbreak status again. Since the reliance on suppressing the insect population with spraying alone is not advisable due to its possible hazards to a forest ecosystem, it was deemed imperative that other means of managing the insect population be developed. Therefore, it studies were continued to find out the causes of the insect outbreak.

The primary focus of the project was stated as “*developing an action plan for integrated management of forests including determining the causes of appearance of Cephalcia tannourinensis in the Tannourine-Hadath El-Jebbeh Cedars Forest*”.

The expected outcomes from this project included:

- Development of an action plan for integrated sustainable management of cedar forests in the region using the Tannourine forest as a case example and addressing various threats to the forest ecosystem;
- Increased institutional and community knowledge exchange, education and capacity building for the management of cedar forests.

Executing Arrangements

The Lebanese Ministry of Environment was to oversee the execution of the project since the initial focus of activity was the already infested Tannourine forest and Tannourine Reserve, which is under the jurisdiction of the MOE. The project was implemented in a very participative approach, involving all the concerned stakeholders at the national and local level. Partners from countries with cedar forests, namely Algeria, Morocco, Cyprus and Turkey were also involved in some specific components of the project. The project was receiving a substantive support from the relevant units in UNEP and GEF.

The government departments, research institutes and universities that the project has collaborated with are the following:

Lebanon:

- Rural Development and Natural Resources Directorate and Forestry Department, Ministry of Agriculture
- Faculty of Agricultural and Food Sciences and the Core Environmental Laboratory,

American University of Beirut

- Faculty of Agricultural Sciences, Lebanese University, Beirut
- National Council for Scientific Research (NCSR)
- Lebanese Agriculture Research Institute (LARI)

Algeria:

- National Institute of Forestry Research, Ministry of Agriculture

Cyprus:

- Cyprus Forestry Department; Ministry of Agriculture, Natural Resources and Environment, Nicosia
- Agricultural Research Institute, Nicosia

Morocco

- Ministry of Water and Forests, P.O. Box 605. Rabat-Chellah
- National Centre for Forestry Research, Ministry of Agriculture & Rural Development, Rabat
- Mohammed V University, Scientific Institute, Rabat

Turkey

- Ministry of Forestry
- Faculty of Forestry, Isparta University, Isparta

In addition to the above, the Chemical Mediators laboratory at INRA-Versailles, France, was involved in the work on the *Cephalcia* pheromone.

In the project document, it was planned to work with partners from Syria. However, during the execution of the project, the Syrian counterparts did not express their interest in the project activities and the partnership was not implemented.

Project Activities

The project duration was initially 36 months starting July 2004 and completing in June 2007, which was later revised and extended to be completed in December 2007.

The project had five components:

1. Development of an action plan for integrated sustainable management of cedar forests in the region using the Tannourine forest as a case example and addressing various threats to the forest ecosystem;
2. The Action Plan was to take into account the unique situation to this area which includes pest infestation of Cedar forests. Thus, the project would foresee the incremental activities that would complement the ongoing studies in Lebanon on *Cephalcia* and that were adaptable to the rest of the region;
3. Assessment of the level of risk from *Cephalcia* in the Mediterranean cedar forests;
4. Promotion of the use of new monitoring tools in detecting insect outbreak and developing and utilizing alternative methods for the control of *Cephalcia* to replace compounds that are not environmentally friendly;
5. Increase in the institutional and community knowledge exchange, education and capacity building for the management of cedar forests.

Some activities were undertaken between August and September 2008. These activities were financed through the remaining budget of the project and were mainly devoted to training workshops on the management and monitoring of insect populations, for management teams from the different cedar forests in Lebanon. Some of the budget was also used to install some basic equipment in the Tannourine Cedar Forest.

Budget

The total budget of the project was US\$ 1,362,200 with US\$ 530,500 funded by the GEF Trust Fund and in-kind co-funding from the participating countries US\$ 226,700, FAO US\$ 150,000, CEDRE project US\$ 30,000, LNCSR Project US\$10,500, Lebanese Government US\$ 324,000, and the private sector US\$ 95,500. The total cost also included US\$ 25,000 in PDF-A costs.

Main Milestones

- Official starting date of the project: June 2004
- Recruitment of Project Director (Dr. Nasri Kawar): October 2004
- Recruitment of Assistant Project Director (Dr. Nabil Nemer): November 2004
- First meeting of the Steering Committee: October 2004 at AUB
- First regional coordination meeting: June 2005 in Beirut
- Workshops and meetings in partner countries starting November 2005: Algeria, Morocco, Turkey and Cyprus.
- First interruption between July 12, 2006 and mid September (War in Lebanon)
- Second interruption (partial) started in November 2006 because of the resignation of the Minister of Environment and the subsequent interruption of payment requests. All activities that had already their request of payments were continued. This partial interruption was overcome in April 2007 by the decision of the Prime Minister to approve the signature of the Director General of the MOE on the project related documents and payment requests.
- Weekly and bi-monthly meetings of the Tannourine Cedar Nature Reserve Committee staff and the Assistant Project Director (Dr. Nabil Nemer)/ three meetings with the members and president of the municipality of Tannourine.
- Second meeting of the Steering Committee: March 2006.
- Project termination: December 2007
- Regular meetings of Project management with MoE focal point and MoE staff
- Small activities undertaken with the remaining budget: August-September 2008

3. SCOPE OBJECTIVES AND METHODS

The objective of this terminal evaluation is to determine the extent to which the project objectives were achieved, or are expected to be achieved, and assess if the project has led to any other positive or negative consequences. Whenever possible the extent and magnitude of any project impacts to date is documented and the likelihood of future impacts determined. The evaluation assesses project performance and the implementation of planned project activities and planned outputs against actual results. The evaluation has focused on the following main questions:

Has the project:

- Developed a sustainable management plan that addresses possible threats to the ecosystem of cedar forests and means of removal of these threats?
- Defined the causes of *Cephalcia* outbreak in Tannourine and assessed the possible threats of similar outbreaks in cedar forests in the Mediterranean region?
- Developed institutional and community knowledge and capacity for the management of cedar forests?

This terminal evaluation was conducted using a participatory approach whereby the UNEP/DGEF Task Manager, key representatives of the executing agencies and other relevant staff were kept informed and consulted throughout the evaluation. The consultant has liaised with the UNEP/EOU and the UNEP/DGEF Task Manager on logistic and/or methodological issues to properly conduct the review in as independent a way as possible, given the circumstances and resources offered. The findings of the evaluation are based on the following:

1. A desk review of project documents including, but not limited to:
 - The project documents, outputs, monitoring reports (such as progress and financial reports to UNEP and GEF annual Project Implementation Review reports) and relevant correspondence.
 - Project Country Reports
 - Other project-related material produced by the project staff or partners.
 - Relevant material published on the project web-site: www.arztannourine.org
2. Interviews/meetings with project management and technical support including:
 - Lina Yamout, MOE
 - Nasri Kawar, Nabil Nemer, AUB
 - Charbel Lahoud, Jane Bal, Sarah Ezzedine, Lara Samaha (graduate students funded by project , AUB and MOE)
 - Members of the local and the project Tannourine Steering Committee
 - Dr. Waterburry, President of the American University of Beirut
 - Phone meeting with the DG of the MOE, Dr. Berj Hatjian.
3. Telephone interviews and emails with the focal points from participating countries from the region (Algeria, Cyprus, Morocco, and Turkey).
4. Telephone interviews with the UNEP/DGEF project task manager and Fund Management Officer.
5. Meetings with some of the scientists involved in the project, mainly Dr. Carla Khater (Management Plan) and Dr. Nadim Farajalla (GIS)
6. Meeting with Mr. Nizar Hani, manager of the Al Shouf Cedar Reserve
7. Telephone meetings with representatives from cedar forests committees in Lebanon
8. Field visits to project staff and project site

9. Vetting of the third and final Tracking Tool for Reporting Progress at Protected Area Sites: Data Sheet completed for this project (Draft prepared by project team in advance of evaluation).

(See Annex 1 for the Terms of Reference of this evaluation).

4. PROJECT PERFORMANCE AND IMPACT

A. Attainment of objectives and planned results

The evaluation assesses the extent to which the project's major relevant objectives were effectively and efficiently achieved or are expected to be achieved and their relevance. The “achievement” indicators provided in the log frame of the project (Annex 2) document are used together with additional monitoring tools including the GEF Biodiversity Tracking Tools.

Effectiveness

Before the implementation of the project, the Tannourine-Hadath El-Jebbeh Cedar Forests were not managed, in a sense that there was no management plan. The forests were under the legal jurisdiction of both the Ministry of Agriculture and Environment, and subject to the forest law, which does not include any management directives. All actions undertaken were on a reaction basis; upon the appearance of the *Cephalcia tannourinensis*, all concerned stakeholders were mobilized to interfere and stop the spreading of the pest. Thanks to the assistance provided by the FAO and the efforts developed by the local and international partners, activities were implemented aiming at limiting the spreading of the insect, through aerial spraying, and monitoring the insect population, along with the monitoring and evaluation of other insect populations in the forests. Forest guards and engineers from the MOA were trained on the monitoring of the insects and on the control methods; traps were installed in some specific points in the forest. A strong collaboration between the MOE, the MOA, the FAO, the French INRA and the American University of Beirut was created and consolidated. However the extent of the activities implemented was limited and not sustainable, because of the lack of the institutional setting that would allow for such sustainability.

The project has also allowed for the creation of links with countries in the region, having cedar forests and equally threatened by the emergence of pests, diseases or invasive species. The training provided the necessary training and monitoring tools to the representatives from these countries, and to the management teams of other cedar forests in Lebanon.

The METT of the project show a clear evolution from the baseline to the final evaluation, going from an initial score of 49 to a terminal score of 59. The tracking tools and other reviewed documents in addition to the field visits and meetings show that the project has succeeded in directly and indirectly assisting policy and decision-makers to apply information supplied by biodiversity indicators in the planning of their national planning and decision making, in particular:

- Tannourine Cedar Forest was proclaimed a Nature Reserve under the legal jurisdiction of the Ministry of Environment by Law No: 9 dated 20/2/1999

- The project has an immediate positive impact on improvements in management effectiveness of the Tannourine-Hadath El-Jebbeh Cedars Forest. A management plan was prepared and is being implemented; a management team is in place; the forest is managed in a pro-active manner, where the monitoring of the fauna and flora plays an important role, along with the monitoring of the disturbances (including the insect pests and diseases). The local population is involved in the management, which eliminates the risks of vandal activities caused by unsatisfied local population.
- The potential longer-term impacts seem to be positive as the main actors concerned by the management have a sustainable institutional setting. The training provided to the local population, and the locally recruited management team insure the appropriation of the forest by the local community; the MOE provides the necessary institutional support, both in term of legal framework and financial support. The involvement of the AUB in terms of research and capacity building is expected to remain stable or even to increase as the interest in forestry related research is increasing. The training provided to the local community and to the management team will allow them to mobilize further funding after the project is over. This is verified by the fact that some projects are currently starting to be implemented. All the stakeholders involved in the management of the PA have the capacity to identify additional funds to those provided by the MOE.
- However, in order to maintain this positive impact in the future, it is important to:
 - Strengthen the institutional setting by enforcing the management team and providing them with better financial/professional conditions; the resignation of the manager is a sign of lack of satisfaction of financial conditions. The situation is similar to that in all the other protected areas and should be dealt with at the national level.
 - Involve other universities and increase their interest in research activities.
 - Encourage local inhabitants to organize and develop income generating and cultural activities around the forest, thus increasing the interest of the tourists and visitors.
 - Find a mechanism to extend the management over the remaining part of the forest and the surrounding stands.
 - It may not be feasible for the time being to think about corridors linking the cedar forests in the region, but this could be kept in mind and planned for in the future.

Relevance

The project was planned to contribute to the improved management of biodiversity of cedar forests and their protection from serious insect pests. The primary focus of this project was on developing an action plan for integrated management of forests including determining the causes of appearance of *Cephalcia tannourinensis* in the Tannourine-Hadath El-Jebbeh Cedars Forest. Moreover, the research and activities carried out in Lebanon on this pest are of value and adaptable to globally significant cedar forests in the rest of the region, to respond to similar cases and future biodiversity management crisis situations.

The project responds directly to the 5th pillar of the emerging directions under GEF-3. The project activities have generated knowledge with respect to management of a globally significant cedar forests in Lebanon, and disseminated lessons learned and best practice integrated forest management (including the pest management) through scientific networking.

The project is most relevant to the implementation of GEF Operational Program Number 3 – Forest Ecosystems. It fits well with the objectives of this Operational Program primarily the conservation or in-situ protection of cedar forests. This operational program lists activities that can be supported by GEF; among these are the typical conservation activities such as remedial actions in forest under threat and control of alien invasive species, which are applicable to the Tannourine forest.

Efficiency

The total budget of the project was US\$ 1,362,200 with US\$ 530,500 funded by the GEF Trust Fund and in-kind co-funding from the participating countries US\$ 226,700, FAO US\$ 150,000, CEDRE project US\$ 30,000, LNCSR Project US\$10,500, Lebanese Government US\$ 324,000, and the private sector US\$ 95,500. The total cost also included US\$ 25,000 in PDF-A costs.

During the implementation of the project, the TCFNR has received financial support from various sources, in order to implement and to strengthen certain activities. These sources of funding include, but are not limited to the annual support provided by the MOE to the Nature Reserves, a contribution from the USAID small grant programme and the Rotary Club. The TCFNR team has also managed to attract the Lebanon Mountain Trail project, thus including one trail (2km) of the TCFNR in the 350km trails crossing over the mountains of Lebanon. The TCFNR team has set the basis for some income generating activities like entrance fees, local guide fees, local products. To that effect, local women were trained on the production of some specific products, based on the local know-how. Local youth were also trained to become guides. The TCFNR team has also developed project proposals to seek the assistance of international donors. An excellent example is the integration of the TCFNR in the recently approved and now operational 3 million USD project, financed by the Fonds Francais pour l'Environnement Mondial (FFEM) supporting the Nature Reserves in Lebanon.

In particular, the project was effective in Matching funds: Securing GEF funds provided an opportunity to leverage co-financing from different sources. This was noted from the beginning of the project where financial support was ensured from the government and private sectors so that full benefit could be made of the GEF funds. The Co-financing table shows that a total of US\$736,200 in cash was secured. This includes the \$300,000 allocated to the TCFNR for the coming three years.

The American University of Beirut has provided the overall financial control. This arrangement has allowed for a better flexibility of the expenditures, as compared to other projects managed by government institutions.

The events that occurred in Lebanon during the summer of 2006 have caused a delay in the implementation of the project activities. This delay was quickly recovered by the project team.

The political crisis and the instability the country has been going through have hindered the development of ecotourism activities at the local and national levels but are within the scope of the TCFNR and are part of the established management plan. Now as the country is moving out of the crisis, it is expected that all tourism activities, and in particular ecotourism, would restart again. However, it is too early to be able to evaluate the efficacy of the TCFNR

team in managing the ecotourism related activities, and to evaluate the financial contribution of this sector.

The training and capacity building provided to the different stakeholders in Tannourine have provided the basis for the local community to be able to attract tourists and to offer them the appropriate products and services.

On the scientific level, the project has built on the previous initiatives undertaken by the AUB, the FAO, the MOA and the French INRA aiming at controlling the widespread of the *Cephalcia tannourinensis* and managing its population. The fact that the AUB team was strongly involved in both phases has guaranteed the continuation of the activities and the building upon the results.

After the closure of the project, in December 2007, some financial resources had remained unspent. The remaining budget was efficiently used in August and September 2008 to develop and implement some further training and capacity building activities to the members of the TCFNR team and to some team members of other cedar forests and reserves in Lebanon; some budget was also used to implement some basic structure at the entrance of the TCFNR.

B. Sustainability

Sustainability is understood as the probability of continued long-term project-derived outcomes and impacts after the GEF project funding ends. The evaluation identifies and assesses the key conditions or factors that are likely to contribute or undermine the persistence of benefits after the project ends. The evaluation tries to ascertain to what extent follow-up work has been initiated and how project outcomes will be sustained and enhanced over time.

Five aspects of sustainability are addressed: financial, socio-political, institutional frameworks and governance, environmental.

Financial resources

As mentioned earlier, the TCFNR has managed to leverage some additional funds to implement some activities that were not covered by the project. In particular, the team has attracted funds through the USAID small grants programme, the FFEM, and the Lebanon Mountain Trail. The attracted funds are both the result of the interest of the donor community in such projects, and the ability of the team to attract such funds.

The contribution provided by the MOE to all the Nature Reserve in the country is barely enough to cover some basic needs, including salaries of the team members (guards, reserve manager...). As this contribution is provided in the framework of the regular budget of the MOE it is meant to remain in the future.

The activities developed and implemented in the framework of the project, and aiming at opening the access to some forms of sustainable tourism are meant to insure some further funds after the project is over. However this is always jeopardized by the instability in the country and in the region. This fact being independent of the management team, it cannot be assessed, but is included as a risk.

The monitoring activities implemented within the reserve are strongly dependent on the will of the AUB to continue the researches in this field. Other Nature Reserves in Lebanon have implemented a monitoring system that is fully dependent on the management team of the reserve, in collaboration with all interested research institutions. The strong involvement of the AUB team in the TCFNR is a current guarantee of the sustainability of such activities beyond the current funding.

The training provided to the local communities and to the management teams insures a certain sustainability of the monitoring activities, in all the areas covered by the project, both in Lebanon and abroad. However, this sustainability will always depend on the wills of the trained partners to continue the initiated activities. The capacities developed will allow the different partners to develop funding requests to donors in order to further implement activities.

It is unfortunate to note that outcomes of similar projects will always depend on continued financial support. It is up to the local communities and concerned authorities to be able to insure the sustainability of the attracted funds.

Socio-political

Several levels of stakeholders were involved in the different parts of the project and in the different phases of implementation. These stakeholders could be grouped into 3 main groups: the government; the scientific community; the local community. The commitment of each of these groups may vary according to some socio-political consideration, and may either jeopardize or enhance the sustainability of the project.

At the government level, the project is integrated within the offices in charge of the Nature Reserves in Lebanon. The TCFNR is gazetted which ensures the sustainability of its legal situation. Given all the commitments of the Lebanese Government towards the international conventions and agreements, and the deep conviction to maintain a representative network of protected areas, it is in the interest of the Ministry of Environment to sustain and support the TCFNR along with other reserves and protected areas in the country. At this level, there are no risks of any social or political changes that could jeopardize the sustenance of the project.

At the scientific community level, mainly represented by the American University of Beirut, the project is confirming the expertise of the AUB and the professional and motivated approach of scientists and administrative staff. The continuous flow of benefits from the project will certainly increase the interest of the AUB and will strengthen its commitment towards the TCFNR and towards the development of further activities in the forestry and natural resources management sector, mainly in the aspects related to the management of forest pests and diseases and invasive species.

At the local community level, the situation may not be as easy to handle as in the case of the previous groups. At the starting of the project, an obvious reluctance and denial of the project and its activities was expressed by some members of the local community. The film that was prepared in the framework of the project shows a marked evolution in the way the concerned stakeholders look at the project and in their ownership of the project. However, this situation might be jeopardized by socio-political changes that might occur within the local community. It might also be jeopardized by some eventual deceptions caused by income generated by the TCFNR being less than the expectations set.

The socio-economic situation of the guards working in the reserve might also jeopardize the sustainability of the project. Their current commitment is based on their deep conviction in the values of the reserve and in its importance. However, their financial situation being very precarious, they might be looking for better paid jobs in the future.

The field visits have shown that the local community is very sensitive to the reserve. There is a serious sense of ownership and pride. The different awareness raising and training activities undertaken at the local level and in schools have increased the sense of ownership. A striking example is that of young boys and girls waiting for the expert (Dr. Nabil Nemer) to visit the reserve with him, to show him their findings and to ask him questions related to the forest. The project has managed to create a sense of ownership at the level of the younger generation in the Tannourine village, which ensures the continuity and sustainability of the commitment of the local community.

As the concerned stakeholders at their different levels see that it is in their interest that the project benefits continue to flow, the socio-political sustainability of the project is ensured despite the minor risks that might affect this sustainability, mainly at the local community level. However, the project has taken the appropriate measures to avoid or mitigate any negative effects by building public awareness in support of the long terms objectives of the project.

Institutional framework and governance

The sustenance of the outcomes of the project is dependent on issues relating to institutional frameworks and governance. The institutional and technical achievements, legal frameworks, policies and governance structures and processes that were put in place, during the preparatory and implementation phases of the project are ensuring the sustainability of the project outcomes/benefits. The project has succeeded in implementing the necessary technical know-how to manage the resource in the most appropriate manner; the project was conducted and managed in exemplar system of transparency and accountability, involving the AUB and the MOE. This is particular noticed in the following aspects:

The regional coordination: The project was implemented by the American University of Beirut (AUB), one of the its roles is to facilitate and enhance collaboration and partnerships. This collaborative network and the relationships created among the different partners is a significant output of the project. AUB has provided assistance with the GEF project procedures and especially the financial management and coordination with the MOE. The AUB has also developed capacity building activities, training, and has provided technical advices which would not have been possible without the project. One of the project activities was to conduct insect surveys in the participating countries; this particular activity can only be conducted by research institutions or universities. The partnership and collaboration system created in the framework of this project has allowed for the development and implementation of such an activity. Similarly, the execution of the activity related to developing new monitoring tools (i.e. pheromone extraction and identification) was also the result of a collaborative work between the National Institute for Agriculture Research (INRA) in France and AUB.

The workshops on cedar forest insects conducted in each of the four countries proved to be successful since they led to sharing of data among these countries and constituted a break-

through and involved both entomologists and forestry people. In Lebanon the insect surveys efforts were mainly concentrated on the *Cephalcia tannourinensis*. However, the information on forest insects collected over the past three years forms a significant database for further studies. In the participating countries, Algeria, Morocco and Turkey already had their insect database and therefore their task was relatively easier since they were looking at one particular insect, *Cephalcia tannourinensis*. The situation in Cyprus was similar to that in Lebanon where no surveys have been done before and they are short on well trained forest entomologists.

The regional cooperation and the networks created will be sustained through the training provided and the implemented know-how.

National and institutional ownership and governance. The ownership of the project was at the national level (MOE) and institutional level (AUB). This is an exemplar collaborative work between government and academic institutions. The project has succeeded in creating and enforcing an institutional collaborative partnership between an academic institution (AUB), a governmental stakeholder (MOE), local NGOs, scientific community, conservation stakeholders and local community groups (Municipalities). This collaborative engagement has led to the generation of trust and respect. The best example was the change of attitude of the Head of the Tannourine Municipality towards the project and the TCFNR committee. He was very negative when he first took office but gradually became more positive when he understood that the primary goal of the project and the reserve was to benefit the local community. The strong links created and the commitment of the Head of the Municipality, ensure the sustainability at the local governance level.

Institutional capacity for project implementation. The American University of Beirut participated in project planning and was an active actor in all activities conducted following the outbreak of the insect in the cedar forest of Tannourine starting in 1996. The execution of some activities necessitated the collaboration with scientists from different departments in AUB through subcontracts. In the absence of specific experts and capacities at AUB, certain activities were subcontracted to a number of local NGOs and experts; six separate subcontracts were issued by the end of the project. The involvement of scientists from other institutions or from the different departments in AUB, along with the involvement of NGOs strengthens the sustainability at the national institutional framework level.

Capacity building was carried out through a number of training workshops. The training provided after the closure of the project has further strengthened the local communities in managing such a project. However the training provided through scholarships for M.Sc. studies in forest entomology and environment had less of a direct impact, as 3 of the graduated students are no longer involved in project related activities. The fourth student being already a staff member of the MOE might be involved in similar activities in the future.

Management Plan. The project has achieved the development of a management plan for the TCFNR for five years (2008-2012). The plan was developed and based upon the problems and challenges related to the Nature Reserves and their possible solutions, while involving the local community groups and taking into consideration their concerns. The government appointed committee is in charge of the management of the TCFNR and of the execution of the plan, under the supervision of the MOE and in collaboration with AUB.

New Monitoring Tool. One of the main achievements of the project on the scientific level was the identification of the *Cephalcia tannourinensis* pheromone. According to the Project Director and the Project Assistant Director this will lead to a better understanding and management of the insect population. Still much work has to be done and using the pheromone as a monitoring tool would surely have great impact on the detection of the presence of *Cephalcia* in cedar forests in the participating countries.

GIS Database. The development of a GIS database for the Tannourine Cedar Forest Nature Reserve was also achieved. The database included data related to topography, flora monitoring, insect monitoring and trails. The temporary boundary of the TCFNR was set following the Law of the Reserves in the absence of a demarcation map from the Tannourine Municipality. However, the exact boundary has to be set in the future in order to measure the natural extension of the forest and also to set the problems encountered with the private land owners. This was an unforeseen limitation but did not hinder the execution of the GIS database development. The GIS data base is based at AUB. The project did not succeed in providing the appropriate training for the local community to use the GIS data base as a management tool. This might be due to the absence of qualified and interested people with the local community. Such an activity would have certainly improved the local institutional framework and the local capacities to manage the resource.

Environmental

There are no foreseen environmental risks that could undermine the future flow of the project's environmental benefits.

Forest fires are currently a major threat on the Lebanese forests. However, these fires although mainly of human origin, occur in different ecosystems. In the Mediterranean region, the cedar forests have proved to be more resistant to fires than other forest ecosystems. The continuous humidity in the cedar forests and the daily mists during the summer, strongly contribute to decreasing the risks of forest fires. However, arson fires could occur, and destroy part of the forest. The regeneration capacity and the dynamics of the cedar forest could compensate for this risk.

A new outbreak of the insect pest *Cephalcia tannourinensis*, or any other insect pest, might occur. However, the monitoring tools installed within the forest will allow for a quick identification of any change occurring in an insect population and the necessary measures would be undertaken accordingly in order to avoid the destruction of the resource.

Despite the potential risks caused by forest fires and insect outbreak, the environmental sustainability of the resource does not seem to be compromised.

C. Achievement of outputs and activities

The assessment of the project' success in producing each of the programmed outputs, both in quantity and in quality, as well as the usefulness and timeliness of these outputs is mainly based on the log frame included in the final report of the project; it is also based on the objectives, outputs and activities stated in the project document, on the different reports provided and on the meetings and filed visits.

Overall Objective: Development of an action plan for integrated management of forests including assessment of insect infestation in cedar forests in the Mediterranean region with particular emphasis on the Tannourine-Hadarh El-Jebbeh cedar forest.

OUTPUT 1. Development of an action plan for integrated sustainable management of cedar forests in the region using the Tannourine forest as a case example and addressing various threats to the forest ecosystem.

Outcome 1. Development of an action plan for integrated sustainable management of cedar forests in the region using the Tannourine forest as a case example and addressing various threats to the forest ecosystem.

Activity 1: Developing a sustainable management plan for the Tannourine Reserve to achieve a high level of protection, conservation, rehabilitation and management of biodiversity, habitats and natural processes to complement the ongoing work on controlling the insect pest.

The Sustainable Management Plan for the Tannourine Cedar Forest Nature Reserve was prepared by Dr. Carla Khater and Ms. Maya Abboud. The plan was completed and approved by the Project team and the Lebanese Ministry of Environment in a workshop held in Tannourine on May 12, 2007. The plan was also translated to Arabic for a better efficiency at the local stakeholders' level.

The management plan is one of the major outputs of this project. Prior to the start of the project, there was no management, and no management plan. The data, if existed, was scattered and not properly utilized. The project has managed to start by establishing some basic data base needed for the preparation of a sound management plan.

The prepared management plan starts by describing the resource and the stakeholders. It identifies the challenges and opportunities of the TCFNR and states the different steps required to achieve a sustainable management of the resource. The plan proposes a list of projects and activities to be financed and implemented for a better pro-active management.

The management plan seems to have been prepared in a participatory approach involving the concerned stakeholders at their different levels and during the different phases of the preparation. It has taken into consideration the particularities of the resource and the local context.

The challenge now remains in the implementation of this plan, which is the responsibility of the TCFNR committee and the MOE, with the strong involvement of the local community.

The funds secured through the new grant from the Fonds Francais pour l'Environnement Mondial (FFEM) (French Fund for Global Environment) will definitely help in this respect. The MOE has secured the first year fund through its annual budget allocation to the nature reserves.

Activity 2: Carry out activities and researches to investigate the effect of specific threats such as forest fire, overgrazing, urbanization, mines, and changes in land use on the health of forests.

After consultation with various entities such as municipalities in Tannourine and neighbouring towns and NGOs, the team came to the conclusion that investigating the effect of specific threats such as forest fire and overgrazing is not needed since fires in cedar forests do not occur and goat grazing in cedar forests has been banned.

Fire has never been part of the local ecosystem and it has never caused any real threat. The prevailing climatic conditions with the regular summer mist and the composition of the cedar forests make them less prone to forest fires.

Until a few decades ago, the Tannourine forest was used by the local community, for different purposes. Different features in the forest show the past intervention of the human beings.

Wood was harvested in a very particular way. The candelabra shape of the trees translate a wood harvesting techniques which consisted of harvesting the main trunk at a certain age, right above some lateral branches; which allowed the lateral branches to grow again into main trunks, some of which could later be harvested again. Small wood was also harvested for fuel.

Some small industries were also practiced within the forest. This is shown by the presence of a local gypsum kiln (yatoun). This stone kiln was used to produce gypsum, using the local calcareous rocks and stones.

The terraces covering the entire site, or most of it, are witnesses of agricultural activities, practiced in the clearings, or even under the trees.

Grazing, and mainly goat grazing was also one of the major activities in the region, and in the forest in particular.

Several factors have led to the abandonment of all, or most of these activities. This abandonment has caused a drastic change in the land use practices. The recent protection of the site, and the banning of activities, mainly grazing, is a land use change in by itself.

It would have been interesting to further investigate the effect of this land use change on the reserve and maybe on the emergence and outbreak of the insect. However the time frame of the project would not have allowed for such investigations. It might be necessary or at least interesting to further investigate these issues in the framework of other projects.

Outcome 2. Increased institutional and community knowledge exchange, education and capacity building for the management of cedar forests.

Activity 1: Formal education on a graduate level of four students.

The comments on this activity are detailed under Output 5, Activity 1

Activity 2: Capacity building of various groups through workshops and training courses.

The different reports prepared by the project team state that seven workshops and training courses were conducted in Tannourine between May and October 2007. A total of 108 persons were involved in these activities, either as participants or trainees. One additional training workshop was organized in August 2008 for representatives from the different cedar forests in Lebanon, on the use of pheromones to monitor insect populations in cedar forests.

Training courses were conducted at the local community level for a better involvement of this community in the TCFNR and a stronger sense of ownership. Of particular interest was the training provided to the Tannourine women on Principles and Techniques of Food Processing, aiming at assisting them in preparing traditional processed food to be sold to visitors of the Reserves and other tourist destination in Tannourine.

These workshops seem to have succeeded in changing the attitude of some of the local community members towards the project. The involvement of the Head of the Municipality in the project and his active role played in the public presentations of the DVD produced in different places, have strongly contributed to the drastic change observed in his attitude, from someone totally refusing the project, to someone defending it. The attitude of some farmers and farmers groups is similar to that of the Head of the Municipality. The representative of the farmers was concerned at first that the establishment of the Reserve will interfere in their livelihood, but he changed his attitude towards the Reserve and environment, in general, when he and other farmers were assured by the president of the TCFNR committee that their rights are preserved as long as they cooperate in preserving the environment.

A NGO that deals with women activities visited the Tannourine Cedar Forest Nature Reserve to establish collaboration with the women of Tannourine for their local produce and particularly assisting in the sale of produce.

The TCFNR committee has established a record of all who participated in the activities of the project and always invites them to any event hosted and/or organized by the TCFNR.

The increased institutional and community knowledge among students of the neighbouring villages was observed on many occasions where the heads of schools and teachers asked the TCFNR committee to give lectures in schools about the reserve and the problems of the environment in general.

A striking example was observed during one of the field visits where local school children have shown an enormous enthusiasm towards the TCFNR and the activities undertaken. They have expressed their admiration towards all the work and were very interested and proud to be part of the team involved in the different activities. They visit the TCFNR office looking for more information and documentation.

The success observed at the local community level is a double sided blade. Any problem occurring and leading to a decrease in the expected flow of tourists in the area, might lead to a disappointment of the local community and a shift back to the original denial attitude. So far, the project seems to have set the appropriate basis to avoid such a change, however continuous efforts should be developed between the MOE, AUB and the TCFNR committee.

The training provided to local women groups seems to have focused on products already being produced in Tannourine. The identification of new products could have created a wider range of items to be sold. Several wild fruits exist in the Reserve and around it. Harvesting them and processing them into jams and preserves, or any other form could bring an interesting added value and would increase the income generated by such activities. The example of items produced by local women groups in Al Shouf Cedar Reserve in the Southern part of Mount-Lebanon could be interesting to follow.

The meetings and phone meetings undertaken with the representatives from the different cedar forests committees in Lebanon have shown a high level of satisfaction of the trainings and workshops provided by the project, mainly regarding the monitoring of insect pests, and the identification of the *Cephalcia tannourinensis*. The strong need to have more training workshops was expressed. This need might have been partially met during the last workshop undertaken in August 2008.

OUTPUT 2. Study of the various factors that caused the *Cephalcia* outbreak in Lebanon. Lessons learned shared among countries participating in the project.

Activity 1: Study of the possible causes of *Cephalcia* outbreak with special emphasis on weather and environmental factors.

The reports provided by the project team confirm that the various factors that caused the *Cephalcia* outbreak in Lebanon were identified. This information was shared with the scientists who have participated in the project in Algeria, Cyprus, Morocco and Turkey.

The reports describe the existence of a correlation between the effect of soil temperature and humidity on the life cycle of *Cephalcia*. This seems to be a significant finding on the possible causes of the outbreak of *Cephalcia* in Tannourine and not in other forests. This finding was reconfirmed by further data collection in Tannourine and other forests.

Dr. Nabil Nemer has confirmed that the *Cephalcia* sp. is frequently disturbed by animals trampling the forest soils. This phenomenon seems to have been observed in other parts of the world, where wild boars trampling the forest soils disturb the life cycle of the insect and prevent the outbreak.

While the hypothesis of the existence of a correlation between soil temperature and humidity and the emergence of the *Cephalcia tannourinensis* should be maintained, it would be interesting to further explore the effect of the interruption of activities in the Tannourine forest. As mentioned earlier, grazing was an integral part of the forest during decades and may be centuries. The sudden interruption of this activity due to the possible disturbance caused by the goats on the ecosystem might be another factor leading to the outbreak of the insect. This hypothesis could be interesting to explore.

Dendrochronology is a science that is very much used to study the different stresses that occur on the forest over decades and centuries. Forest fires, water stresses, insect attacks and other forms of stress could be traced back over time through the study of the tree rings and their growth patterns. This highly advanced tool could be used at a later stage to further analyse the causes of outbreak of the insect and its correlation to the different factors. It could also allow for the determination of previous outbreaks that might have occurred in the past.

Activity 2: Establishment of a GIS database of the Tannourine Cedar Forest Nature Reserve for use in regular monitoring of all changes occurring in the reserve.

The description of soil profiles and analysis of soil samples in TCFNR was completed in 2006. A total of 26 profiles in the reserve were described and soil analyses were completed. A soil map of the Reserve was also produced. The information was fed into the GIS database of the TCFNR. Dr. Issam Bashour, Professor of Soils at AUB was in charge of this activity. The GIS database and various maps of the TCFNR have been prepared. Dr. Nadim Farajalla,

Assistant Professor of Hydrology at AUB and specialist in GIS was in charge of this activity. Study of the flora of the TCFNR was carried out by Dr. Elsa Sattout and the information was entered on the GIS database.

The GIS map will form a basis for use in regular monitoring of all changes occurring in the reserve and has been downloaded on the computer in the reserve office. The TCFNR committee is aware of the importance of using this tool for biodiversity monitoring and has included a budget line for this purpose. Dr. Nabil Nemer (Project assistant director and member of the TCFNR committee) is following up on the collection of data and feeding the GIS database in collaboration with Dr. Nadim Farajalla. Moreover, AUB has started the discussion to establish a GIS facility unit at the FAFS which should be operational in September 2008.

The GIS data base is a very essential and important monitoring tool to be used for the management of the site.

Although the GIS data base is currently available in the TCFNR office in Tannourine, no training was provided to the local community on the use of this data base. One of the local members of the team should be trained to use this tool, in strong collaboration with the AUB team.

OUTPUT 3. Level of risk from *Cephalcia* attack is assessed for cedar forests in the Mediterranean region.

Activity 1: Coordinate activities between Lebanon and the other counties involved in the project on assessment of risk from *Cephalcia* attack of cedar forests.

Coordination with the scientists participating in the project in Algeria, Cyprus, Morocco and Turkey has been ongoing since the start and was specially enhanced through the coordination meetings in Lebanon and the workshops conducted in the four countries. Syria has not participated as planned which is unfortunate, as this participation would have allowed a better analysis of the odds of occurrence of the *Cephalcia tannourinensis* along a certain geographical pattern.

The contacts, phone meetings and emails (Annex 3) exchanged with the partners from the different countries show the high level of interest of these partners in the project and in the activities undertaken. All partners have expressed their great satisfaction to have been part of the project, despite the fact that the pest was not identified in any of the countries. However the monitoring tools used were very useful for the further monitoring of other insect pests in the different forests.

The project has created strong links among the different partners which should be further built upon to strengthen the cooperation in this field.

It is worth mentioning here that the FAO has recently created a regional network on forest pests and diseases and invasive species. It would be interesting to create links with this network and to feed it with the results of this project. The network is managed by the FAO Regional Near-East commission in Cairo-Egypt.

Activity 2: A thorough survey of all cedar forests in the Mediterranean region for *Cephalcia* and its natural enemies and implement actions in forests already under the threat from the pest.

The surveys that were carried in Algeria, Morocco, Cyprus and Turkey by the project team and scientists from the four participating countries have shown that the *Cephalcia* is not present in any of the surveyed forests. Insect surveys in cedar forests in Lebanon have shown that *Cephalcia* is only found in the Tannourine and Bcharreh forests and has not spread to other regions.

The participating countries plan to continue the monitoring programs that were initiated by the project. Samples of *Cephalcia* pheromones will be sent to these countries. The participating countries are now fully aware of the problem and dangers caused by *Cephalcia* outbreak in Lebanon. The outputs prepared in the projects from DVDs, booklets and brochures will help them further in identifying the problem and therefore reduce the risk of *Cephalcia* outbreak.

The *Cephalcia* is currently being monitored in the Bcharreh forest in Lebanon, but no action can be undertaken to control it because of the lack of means. The local community group and the concerned Lebanese authorities (MOA and MOE) will certainly react in case the insect population in this highly important cedar forest reaches the level of danger. So far the monitoring of the insect is showing that the level of the population is still below the level of danger. It is important to mention here that this particular cedar forest has long been heavily trampled by tourists, and goat herds. Severe signs of degradation were seen in the forest and on the centuries old trees, until action were taken to prohibit grazing and to channel tourists in forest tracks. This initiative has strongly contributed to the recovery of the forest and the trees from the stress they were submitted to. It is not possible to tell if the *Cephalcia* has existed there.

OUTPUT 4. Promoting the use of new monitoring tools in detecting insect outbreak and developing and utilizing alternative methods for the control of *Cephalcia* to replace compounds that are not environmentally friendly.

Activity 1: Extracting the *Cephalcia* pheromone and determining its chemical composition and exploring the possibility of synthesizing it for possible use in monitoring and controlling the insect.

The reports provided confirm that the composition of *Cephalcia* pheromones was elucidated using gas chromatography/mass spectroscopy. Synthesis of the pheromones was also undertaken and tested in the Tannourine forest in May 2007. The reports confirm as well that the work on *Cephalcia* pheromones in cooperation with INRA was successful. The composition of the pheromone blend was identified with the three products it is composed of. Good and promising results were obtained after the tests conducted during May 2007.

Further testing of the synthesized products is in progress and more data and time seem to be necessary before the marketing of the products. A supply of these products will be available for field testing for monitoring purposes. The National Institute of Agricultural Research (INRA) at Versailles France will continue the cooperation with the Project assistant director who is also a member of the TCFNR Committee and AUB through research projects.

The new monitoring technique developed with the use of the pheromone has contributed to an improvement of the monitoring methods which were previously labour-intensive and time-consuming. This will lead to a faster detection of the outbreaks and a more efficient and proactive decisions regarding the interventions to be undertaken.

Activity 2: Developing alternative methods of insect pest control including the search for natural enemies of *Cephalcia* and the possible implementation of an IPM program.

Most of the work in developing alternative methods of *Cephalcia* control was on the use of *Beauveria* species. Testing the efficacy of this fungus for controlling *Cephalcia* larvae under laboratory conditions showed promising results. However, the fungus has to be tested in the forest under natural conditions to determine in order to confirm its efficiency. The fungus was also tested against other forest insect pests with equally good results. Molecular techniques were used in identifying the *Beauveria* species. Further studies on testing *Beauveria* species against other cedar forest insects is in progress. AUB and former project personnel are still actively pursuing the work on the new biological control agent. *Beauveria* collected from the Tannourine soil have proven to be very effective so far on two forest insects and this could be a major tool to implement the use of *Beauveria* in the integrated management of the cedar web spinning sawfly, *Cephalcia tannourinensis*. This is not a direct step and requires many tests before its application in forest spraying.

The project has contributed in identifying a biological control agent and in demonstrating its efficiency against *Cephalcia*.

In severe outbreaks, natural enemies may not be very efficient in controlling *Cephalcia* population, and an Integrated Pest Management program could be more feasible. This fact cannot be confirmed currently, as long as the population of the insect is below the danger line.

OUTPUT 5: Increased institutional and community knowledge exchange, education and capacity building for the management of cedar forests.

Activity 1: Carry out activities to build a team of professionals specialized in forest entomology, ecology, biodiversity and related fields by granting fellowships for Masters Degrees in these specializations.

The project budget supported four graduate students, three of which have studied at the American University of Beirut while the fourth student, an engineer Head of Department of Conservation of Nature Wealth, in the MOE, studied at the St. Joseph University.

The ideal scenario would have been to have these students enrolled in the concerned ministries to participate in the management of the TCFNR and other reserves and protected areas. However, the employment policy in the different ministries is under the jurisdiction of the Counsel of the Public Function. Public employment is currently frozen.

The three students after having achieved their studies are currently working in the private sector. They are not able to make use of their knowledge and background in the most appropriate way.

The fourth student, who is already working in the MOE, is in a position to implement the results of her academic work, at the service of her job. Her studies having carried in the St.

Joseph University, has allowed the project to open to other universities and not be limited to the AUB.

The email messages (Annex 3) received from the interviewed students show the importance of their work, and express their pride of having scientifically contributed to an important topic. One of the students, Mr. Charbel Lahoud has expressed his disappointment caused by the inability of the concerned public authorities to host him and to offer him a sustainable position in which he could have further invested himself. This is understandable in the light of the current freeze on the recruitment of new staff in most of the positions in the ministries.

The project reports mention that project has achieved a good scientific output including: Two papers published in refereed journals, three abstracts of papers presented at international scientific meetings, four Masters Thesis, and three memoires resulting from the research project carried out by three students at the Lebanese University.

The fact that two papers were published in refereed journals is a sign of the high quality of the work undertaken, and its high scientific interest.

Activity 2: Carry out activities to train various target groups on invasive species control, forest management, flora and fauna monitoring and the use of GIS and GPS in this field and resource mobilization.

According to the reports provided and to the meetings carried with the representatives from the local community, this activity was accomplished through a number of workshops and training courses that were conducted in Tannourine. These activities have proved to be very fruitful in terms of increasing awareness among local community and particularly students. The number of schools interested in taking part of the activities carried out by the TCFNR has increased, with more than 6 schools asking to be informed about activities and to have their students involved.

The project team believes that more training sessions should be conducted in the future to keep the local community interested in the Reserve and to increase their sense of ownership.

The field visit has confirmed that the permanent availability of documents and information material in the offices of the TCFNR is giving the local students the chance to consult documents and brochures and to increase their knowledge about the Reserve, its flora and its fauna.

As the field visits were undertaken in summer time, during school holidays, it was not possible to meet any school teacher or to participate in any school activity. However, as mentioned earlier, the enthusiasm of the local school children was obvious and impressive.

Activity 3: Carry out public awareness initiatives about the importance of forests and biodiversity by preparing information material.

A variety of information materials were prepared for wide distribution. These include:

- A DVD documentary on the Project and the TCFNR. One thousand copies were prepared with the possibility of preparing additional copies. Many copies have already been distributed to various stakeholders, including the TCFNR committee, MOE staff,

and AUB Information Office. The documentary was shown on all TV stations in Lebanon.

The DVD is interesting, very informative, well produced, with beautiful scenes showing the forest and its richness, and describing the threat by the *Cephalcia* and the different activities undertaken.

- Ten different publications about the project and the TCFNR were prepared and include three technical booklets, two technical pamphlets, a set of 17 cards describing birds of the TCFNR and four posters. A total of 24,000 copies of these publications were printed for distribution to various stakeholders and visitors of the Reserve. It is important to note in this respect that the story about the project published on the AUB website was translated to Arabic by the AUB Information Office and distributed to the Lebanese press. Several daily newspapers published the story.

The information material about the project, the fauna, the flora and the birds are very well illustrated, and printed on nice and good quality paper. However it would have been interesting to have some visitor-friendly documents or booklets, to be consulted on site.

- A new website for the TCFNR was established. It is www.arztannourine.org. E-mail address: info@arztannourine.org

The web site is well designed and user friendly. It describes well the TCFNR and its characteristics. It would certainly gain to be enriched with more pictures.

D. Catalytic Role

The project was implemented inside the TCFNR, and has involved national and international partners.

The different trainings provided to the national and international partners have built their capacities to allow them to replicate the approach, in terms of monitoring forest insect pests and invasive species, and in particular in identifying eventual episodes of *Cephalcia* outbreak. In this context, the project has succeeded in being replicable both at the national and international levels.

The approach used to increase the sense of ownership of the local communities in Tannourine, and the shift observed in the attitude of some of the local stakeholders (from total refusal to real ownership) could also be replicated at the national level, in similar projects.

The project has succeeded in playing a catalytic role in identifying other funding sources to finance new activities, based on the outcomes achieved. The new grant provided by the Fonds Francais pour l'Environnement Mondial is one of the examples that illustrate the catalytic role played by the project.

E. Assessment monitoring and evaluation systems.

M&E design

In the project document a detailed M&E methodology was described, in order to monitor results and track progress towards achieving project objectives. The M&E plan included a baseline (including data, methodology, etc.), SMART indicators and data analysis systems, and evaluation studies at specific times to assess results. The time frame for various M&E activities and standards for outputs are specified.

The design of the M&E does not consider monitoring biodiversity, level of awareness and impact and achievement of activities planned or implemented.

M&E plan implementation

The Terminal Evaluation has verified that: an M&E system was in place and facilitated timely tracking of results and progress towards projects objectives throughout the project implementation period (through use of a logframe or similar); annual project reports and Progress Implementation Review (PIR) reports were complete, accurate and with well justified ratings; that the information provided by the M&E system was used during the project to improve project performance and to adapt to changing needs; and that project had an M&E system in place with proper training for parties responsible for M&E activities.

The Terminal Evaluation has also noted that the M&E system did not take into consideration monitoring the biodiversity within the forest and monitoring the impact of the new management plan and the new activities developed. The M&E does not propose any tool or mechanism to measure and monitor the increase in the awareness at the levels of the concerned stakeholders.

A permanent monitoring tool or mechanism should have been implemented in order to monitor the impact and the level of achievement of the different activities undertaken or planned.

Budgeting and Funding for M&E activities

The M&E was properly budgeted (e.g.: travel for evaluation mission; budget line 5500).

No budget was allocated for the monitoring of the impact and level of achievement of the different activities undertaken or planned.

F. Preparation and Readiness

The project's objectives and components are clear, practicable and feasible within its timeframe. The capacities of executing institution and counterparts were properly considered when the project was designed. This is the result of the preparatory approach involving all the concerned stakeholders and institutions adopted during the preparation phase of the project. The project has built upon the previous initiatives in the Tannourine forest and the lessons learnt were properly incorporated in the project design. The project document has identified and properly determined the roles and responsibilities of the different partners. The resources provided by the counterparts, both national and international (funding, staff, and facilities), were efficiently used. The enabling legislation related to the forest reserves and to the declaration of the TCFNR has strengthened the status of the reserve and has allowed for the appropriate implementation of the project. An adequate project management arrangement was in place, with a project manager and an assistant, working from AUB and with counterparts from the different concerned institutions. The MOE has provided the necessary institutional support. A national steering committee was formed and has met on a regular basis.

G. Country ownership / driveness

The project design and implementation were in line with the national development and environmental agendas, the commitment of Lebanon towards the international and regional agreements. Specifically:

- The project was effective in providing and communicating information that catalyzed action in the surrounding local communities of Tannourine and at the national level with respect to improving the management of the ecosystem.
- The Government of Lebanon, represented by the MOE has shown a high level of commitment to the generation and use of management plan and supporting technical reports for decision-making during the project. Experience with projects implemented in other protected areas and nature reserves, has shown this commitment even beyond the end of the project.

H. Stakeholder participation / public awareness

This consists of three related and often overlapping processes: information dissemination, consultation, and “stakeholder” participation. Stakeholders are the individuals, groups, institutions, or other bodies that have an interest or stake in the outcome of the GEF- financed project. The term also applies to those potentially adversely affected by a project (1. communities surrounding the Tannourine Forest Reserve; 2. the countries cooperating with the project from the pest management perspective).

- During the preparation phase of the project, stakeholders from the participating countries were identified on the basis of their involvement in research activities related to forest entomology and to their participation in this context to the management of the cedar forests in their countries. It is unfortunate that the Syrian counterpart did not participate in the project. The emails received from three of the four partners (Turkey, Algeria and Morocco) and the phone meeting with the representative from Cyprus, have shown a high level of appreciation of the project and its activities.

The main strengths of the mechanisms put in place are translated by the interest shown by the partners and their involvement in the activities. The mechanism has allowed for the establishment of a stronger partnership between the different countries. It has confirmed the absence of the *Cephalcia* in the concerned countries.

The main weakness of the project is the limited number of activities undertaken at the regional level, and the limited budget allocated to such activities. Partners have expressed by phone and by email, their need to have more similar activities.

- The collaboration/interactions between the project partners were limited to the workshops and meetings. Other forms of interactions could not have been possible in the framework of such a project. However, this limited level of collaboration/interaction has allowed the strengthening of the relationship mainly between the AUB and the country representatives, which is an asset for the implementation and development of future activities.

The collaboration/interactions with the Lebanese partners were very fruitful as they have allowed for an efficient exchange of information and experiences among representatives from the different cedar forests reserves. In this context, the collaboration was not limited to the exchange of information on the monitoring of the *Cephalcia*, but on all aspects related to the management of the reserves and to the problems they are faced with. The collaboration/interaction was crowned by the common project funded by the Fonds Francais pour l'Environnement Mondial, and involving several reserves and protected areas.

- Several public awareness activities were undertaken during the course of implementation of the project. The most efficient activities were those undertaken in Tannourine, as they have succeeded in mobilizing the young generation and in increasing their interest in the issues related to the TCFNR. They have also succeeded as mentioned earlier, in positively changing the attitude of the Head of the Municipality and some farmers towards the reserve.

Other public awareness raising activities were undertaken, like a lecture delivered in the Notre Dame University. The effectiveness of such an activity is rather limited as it is restrained to one university. Similar activities, in other universities would have certainly increased the effectiveness of this awareness raising.

Despite the great number of DVDs and documents produced, their distribution was rather limited. A wider and broader distribution could have increased the awareness on the results of the project. It is assumed that the DVDs and documents will be directly distributed to interested visitors, thus increasing the level of awareness and increasing the effectiveness of such an activity.

I. Financial planning

Evaluation of financial planning requires assessment of the quality and effectiveness of financial planning and control of financial resources throughout the project's lifetime. Evaluation includes actual project costs by activities compared to budget (variances), financial management (including disbursement issues), and co-financing. (Annex 4 shows the final financial report and audit report)

The financial aspects of the project were handled by the Office of Grants and Contracts in AUB, in collaboration with the MOE.

- The financial controls, including reporting and planning, seem to have been useful enough to help the project management make the appropriate decisions regarding the budget, and allow for a proper and timely flow of funds for the payment of satisfactory project deliverables.
- The funds previously allocated for certain activities that were not undertaken (budget line 2200) were later on reallocated. Whereas whenever a small budget readjustment was needed, this was done in a transparent manner, as for example: "According to AUB records, the \$4,430 entered under #2205 should be under #2204. So most of the \$5,000 has been spent".

- The financial audit that was undertaken confirms the transparency of the financial system, and no major findings were noted.
- All expenses had to be approved by the MOE. This procedure has contributed to the transparency of the project; it has also increased the bureaucracy and has added a burden on the project management. However, this has not caused any delay in the execution of the planned activities.
- The project management team was very keen on obtaining the best deals and the best prices for activities, equipment and services, which has strongly contributed in reducing the related costs.

J. Implementation approach

This includes an analysis of the project's management framework, adaptation to changing conditions (adaptive management), partnerships in implementation arrangements, changes in project design, and overall project management.

- The project implementation mechanisms outlined in the project document were closely followed. The national steering committee has met on a regular basis to assist in the decision making regarding the project and its activities.

The project document was clear and realistic enough to enable the effective and efficient implementation. The project was executed according to the plan, with only two changes:

- a. The "Activity 2: Carry out activities and researches to investigate the effect of specific threats such as forest fire, overgrazing, urbanization, mines, and changes in land use on the health of forests" was abandoned, as it was considered irrelevant to the project.
- b. The assessment planned to take place in Syria was not carried out, because of the lack of cooperation from the Syrian counterpart.

The project management was quickly able to adapt to the changes that occurred. These changes did not affect the smooth running of the project.

- The effectiveness and efficiency and adaptability of project management and the supervision of project activities / project execution arrangements seem to be highly satisfactory at all levels (1) policy decisions: Steering Group; (2) day to day project management in each of the country executing agencies and UNEP-WCMC. No major problem seems to have arisen; this is confirmed by all the reports and the feedbacks from the partners.

K. UNEP Supervision and backstopping

This item is evaluated based on phone meetings with the officer in charge of the backstopping and on the meetings with the national stakeholders.

The backstopping officer has provided the necessary support whenever needed. The documents were reviewed; the material to be printed was revised and commented upon.

The concerned unit in UNEP/D GEF seems to have been efficient in providing the necessary supervision and administrative and financial support.

No administrative, operational and/or technical problems and constraints influencing the effective implementation of the project were identified, nor were they raised during any stage of the evaluation process.

5. CONCLUSION AND RATINGS

The project had the following main achievements:

- The development of a sustainable management plan for the Tannourine Reserve to achieve a high level of protection, conservation, rehabilitation and management of biodiversity, habitats and natural processes to complement the ongoing work on controlling the insect pest. The plan was completed and approved by the Project team and the Lebanese Ministry of Environment in a workshop held in Tannourine on May 12, 2007. The plan was also translated to Arabic for a better efficiency at the local stakeholders' level.
- Building the capacities of various groups through workshops and training courses. The different reports prepared by the project team state that seven workshops and training courses were conducted in Tannourine between May and October 2007. A total of 108 persons were involved in these activities, either as participants or trainees. One additional training workshop was organized in August 2008 for representatives from the different cedar forests in Lebanon, on the use of pheromones to monitor insect populations in cedar forests.
- Studying the possible causes of *Cephalcia* outbreak with special emphasis on weather and environmental factors. The reports provided by the project team confirm that the various factors that caused the *Cephalcia* outbreak in Lebanon were identified. This information was shared with the scientists who have participated in the project in Algeria, Cyprus, Morocco and Turkey. The reports describe the existence of a correlation between the effect of soil temperature and humidity on the life cycle of *Cephalcia*. This seems to be a significant finding on the possible causes of the outbreak of *Cephalcia* in Tannourine and not in other forests. This finding was reconfirmed by further data collection in Tannourine and other forests.
- Establishment of a GIS database of the Tannourine Cedar Forest Nature Reserve for use in regular monitoring of all changes occurring in the reserve. The description of soil profiles and analysis of soil samples in TCFNR was completed in 2006. A total of 26 profiles in the reserve were described and soil analyses were completed. A soil map of the Reserve was also produced. The information was fed into the GIS database of the TCFNR. The GIS data base is a very essential and important monitoring tool to be used for the management of the site.
- Coordinating the activities between Lebanon and the other countries involved in the project on assessment of risk from *Cephalcia* attack of cedar forests. Coordination with the scientists participating in the project in Algeria, Cyprus, Morocco and Turkey has been

ongoing since the start and was specially enhanced through the coordination meetings in Lebanon and the workshops conducted in the four countries.

- Undertaking a thorough survey of all cedar forests in the Mediterranean region for *Cephalcia* and its natural enemies and implementing actions in forests already under the threat from the pest. The surveys that were carried in Algeria, Morocco, Cyprus and Turkey by the project team and scientists from the four participating countries have shown that the *Cephalcia* is not present in any of the surveyed forests. The surveys in Lebanon by yellow traps has evidenced the presence of *Cephalcia* in two forest Tannourine and Bcharreh; further investigations should be carried out to ascertain these findings by pheromone traps in all the cedar forest in the next years.
- Extracting the *Cephalcia* pheromone and determining its chemical composition and exploring the possibility of synthesizing it for possible use in monitoring and controlling the insect. The reports provided confirm that the composition of *Cephalcia* pheromones was elucidated using gas chromatography/mass spectroscopy. Synthesis of the pheromones was also undertaken and tested in the Tannourine forest in May 2007. The new monitoring technique developed with the use of the pheromone has contributed to an improvement of the monitoring methods which were previously labour-intensive and time-consuming. This will lead to a faster detection of the outbreaks and a more efficient and proactive decisions regarding the interventions to be undertaken.
- Developing alternative methods of insect pest control including the search for natural enemies of *Cephalcia* and the possible implementation of an IPM program. Most of the work in developing alternative methods of *Cephalcia* control was on the use of *Beauveria* species. Testing the efficacy of this fungus for controlling *Cephalcia* larvae under laboratory conditions showed promising results. The fungus will have to be tested in the forest under natural conditions in order to confirm its efficiency. In severe outbreaks, natural enemies may not be very efficient in controlling *Cephalcia* population, and an Integrated Pest Management program could be more feasible. This fact cannot be confirmed currently, as long as the population of the insect is below the danger line.
- Carrying out activities to build a team of professionals specialized in forest entomology, ecology, biodiversity and related fields by granting fellowships for Masters Degrees in these specializations. The project budget supported four graduate students, three of which have studied at the American University of Beirut while the fourth student, an engineer in the MOE, studied at the St. Joseph University. The project reports mention that project has achieved a good scientific output including: Two papers published in refereed journals, three abstracts of papers presented at international scientific meetings, four Masters Thesis, and three memoires resulting from the research project carried out by three students at the Lebanese University.
- Carrying out activities to train various target groups on invasive species control, forest management, flora and fauna monitoring and the use of GIS and GPS in this field and resource mobilization. These activities have proved to be very fruitful in terms of increasing awareness among local community and particularly students.
- Carrying out public awareness initiatives about the importance of forests and biodiversity by preparing information material. A variety of information materials were prepared for wide distribution. These include: A DVD documentary on the Project and the TCFNR;

Ten different publications about the project and the TCFNR; A new website for the TCFNR www.arztannourine.org. E-mail address: info@arztannourine.org

Some findings

- The outbreak of the *Cephalcia tannourinensis* may have been caused by a change in the local climatic conditions (high temperature, low soil humidity). Current changes in climatic conditions at the global level, might lead to the outbreak of new pests and diseases in different ecosystems.
- The *Cephalcia tannourinensis* was not found in any of the countries in the region; in Lebanon it was only found in one cedar stand, in Becharre, in addition to Tannourine-Hadath el Jebbeh.
- Ecotourism should not be considered as the main income generating activity for the local community groups, as it is directly affected by the political instability in the country and in the region.

Ratings

The following rating system is applied:

- HS = Highly Satisfactory
- S = Satisfactory
- MS = Moderately Satisfactory
- MU = Moderately Unsatisfactory
- U = Unsatisfactory
- HU = Highly Unsatisfactory
- L = Likely
- ML = Moderately Likely

CRITERION	EVALUATOR'S SUMMARY COMMENTS	EVALUATOR'S RATING
A. ATTAINMENT OF PROJECT OBJECTIVES AND RESULTS (OVERALL RATING) SUB CRITERIA (BELOW)	THE PROJECT WAS SUCCESSFUL IN DEVELOPING A SUSTAINABLE MANAGEMENT PLAN THAT ADDRESSES POSSIBLE THREATS TO THE ECOSYSTEM OF CEDAR FORESTS AND MEANS OF REMOVAL OF THESE THREATS; IN DEFINING THE CAUSES OF <i>CEPHALCIA</i> OUTBREAK IN TANNOURINE AND ASSESSING THE POSSIBLE THREATS OF SIMILAR OUTBREAKS IN CEDAR FORESTS IN THE MEDITERRANEAN REGION; AND IN DEVELOPING INSTITUTIONAL AND COMMUNITY KNOWLEDGE AND CAPACITY FOR THE MANAGEMENT OF CEDAR FORESTS.	HS

CRITERION	EVALUATOR'S SUMMARY COMMENTS	EVALUATOR'S RATING
<p>A. 1. EFFECTIVENESS</p>	<p>THE PROJECT HAS ALLOWED THE CREATION OF LINKS WITH COUNTRIES IN THE REGION, HAVING CEDAR FORESTS AND EQUALLY THREATENED BY THE EMERGENCE OF PESTS, DISEASES OR INVASIVE SPECIES. THE TRAINING PROVIDED THE NECESSARY TOOLS TO THE REPRESENTATIVES FROM THESE COUNTRIES, AND TO THE MANAGEMENT TEAMS OF OTHER CEDAR FORESTS IN LEBANON.</p> <p>THE METT OF THE PROJECT SHOW A CLEAR EVOLUTION FROM THE BASELINE TO THE FINAL EVALUATION, GOING FROM AN INITIAL SCORE OF 49 TO A TERMINAL SCORE OF 59. THE TRACKING TOOLS AND OTHER REVIEWED DOCUMENTS IN ADDITION TO THE FIELD VISITS AND MEETINGS SHOW THAT THE PROJECT HAS SUCCEEDED IN DIRECTLY AND INDIRECTLY ASSISTING POLICY AND DECISION-MAKERS TO APPLY INFORMATION SUPPLIED BY BIODIVERSITY INDICATORS IN THE PLANNING OF THEIR NATIONAL PLANNING AND DECISION MAKING.</p>	<p>HS</p>
<p>A. 2. RELEVANCE</p>	<p>THE PROJECT RESPONDS DIRECTLY TO THE 5TH PILLAR OF THE EMERGING DIRECTIONS UNDER GEF-3. THE PROJECT ACTIVITIES HAVE GENERATED KNOWLEDGE WITH RESPECT TO MANAGEMENT OF A GLOBALLY SIGNIFICANT CEDAR FORESTS IN LEBANON, AND DISSEMINATED LESSONS LEARNED AND BEST PRACTICE INTEGRATED FOREST MANAGEMENT (INCLUDING THE PEST MANAGEMENT) THROUGH SCIENTIFIC NETWORKING.</p> <p>THE PROJECT IS MOST RELEVANT TO THE IMPLEMENTATION OF GEF OPERATIONAL PROGRAM NUMBER 3 – FOREST ECOSYSTEMS. IT FITS WELL WITH THE OBJECTIVES OF THIS OPERATIONAL PROGRAM PRIMARILY THE CONSERVATION OR IN-SITU PROTECTION OF CEDAR FORESTS.</p>	<p>HS</p>
<p>A. 3. EFFICIENCY</p>	<p>THE PROJECT WAS EFFICIENT. ADAPTIVE MANAGEMENT MEASURES WERE TAKEN THROUGHOUT THE PROJECT THAT HELPED ENSURE THE ACHIEVEMENTS OF OBJECTIVES IN A COST EFFICIENT MANNER. THE PROJECT WAS EFFICIENT IN MATCHING FUNDS, ATTRACTING ADDITIONAL FUNDING AND BUILDING ON PREVIOUS INITIATIVES.</p>	<p>HS</p>
<p>B. SUSTAINABILITY OF PROJECT OUTCOMES (OVERALL RATING) SUB CRITERIA (BELOW)</p>	<p>MOST OF THE ACTIVITIES UNDERTAKEN BY THE PROJECT ARE MOST LIKELY TO BE SUSTAINED, AS ALL THE NECESSARY MEASURES WERE TAKEN TO INSURE THE SUSTAINABILITY OF THE PROJECT AT ALL LEVELS.</p>	<p>ML</p>

CRITERION	EVALUATOR'S SUMMARY COMMENTS	EVALUATOR'S RATING
B. 1. FINANCIAL	THE PROJECT HAS MANAGED TO ATTRACT ADDITIONAL FUNDS AND TO BUILD THE CAPACITIES OF THE LOCAL COMMUNITY GROUPS ON THE TECHNIQUES AND PROCEDURES OF RAISING FUNDS AND WRITING PROPOSALS; THE PROJECT BENEFITS OF A CERTAIN CONTRIBUTION FROM THE REGULAR BUDGET OF THE MINISTRY OF ENVIRONMENT. TOURISTS ARE VERY LIKELY TO VISIT THE SITE AND BRING A DIRECT ECONOMICAL CONTRIBUTION. THE FINANCIAL SUSTAINABILITY WILL ALWAYS DEPEND ON CONTRIBUTIONS AND PROJECTS TO BE IMPLEMENTED. IN ADDITION TO THE FACT THAT TOURISM IS SEASONAL AND HIGHLY INFLUENCED BY THE POLITICAL SITUATION IN THE COUNTRY, THE INCOME GENERATED BY TOURISTS IS UNLIKELY TO COVER ALL THE NEEDS OF THE RESERVE.	ML
B. 2. SOCIO POLITICAL	THE SOCIO-POLITICAL SUSTAINABILITY OF THE PROJECT IS ENSURED AT ALL LEVELS (GOVERNMENTAL, SCIENTIFIC AND LOCAL COMMUNITY) DESPITE THE MINOR RISKS THAT MIGHT AFFECT THIS SUSTAINABILITY, MAINLY AT THE LOCAL COMMUNITY LEVEL. THE PROJECT HAS TAKEN THE APPROPRIATE MEASURES TO AVOID OR MITIGATE ANY NEGATIVE EFFECTS BY BUILDING PUBLIC AWARENESS IN SUPPORT OF THE LONG TERMS OBJECTIVES OF THE PROJECT.	L
B. 3. INSTITUTIONAL FRAMEWORK AND GOVERNANCE	THE PROJECT IS SUSTAINABLE IN TERMS OF INSTITUTIONAL FRAMEWORK AND GOVERNANCE. IT HAS SUCCEEDED IN IMPLEMENTING THE NECESSARY TECHNICAL KNOW-HOW TO MANAGE THE RESOURCE IN THE MOST APPROPRIATE MANNER; THE PROJECT WAS CONDUCTED AND MANAGED IN AN EXEMPLAR SYSTEM OF TRANSPARENCY AND ACCOUNTABILITY, INVOLVING THE AUB AND THE MOE.	ML
B. 4. ECOLOGICAL (ENVIRONMENTAL)	DESPITE THE MINOR POTENTIAL RISKS CAUSED BY FOREST FIRES AND INSECT OUTBREAK, THE ENVIRONMENTAL SUSTAINABILITY OF THE RESOURCE DOES NOT SEEM TO BE COMPROMISED. THE CEDARS ECOSYSTEM IS NOT VULNERABLE TO FIRE, AND CEDAR TREES HAVE A GOOD CAPACITY TO REGENERATE; THE MONITORING SYSTEM THAT IS IMPLEMENTED IN THE FOREST WILL ALLOW FOR AN IMMEDIATE REACTION IN CASE OF INSECT OUTBREAK THREATS.	L
C. ACHIEVEMENT OF OUTPUTS AND ACTIVITIES	<p>THE PROJECT HAS ACHIEVED MOST OF THE PLANNED OUTPUTS AND ACTIVITIES IN A VERY SATISFACTORY MANNER.</p> <p>THE ACTIVITY 2 OF OUTPUT 1 "CARRY OUT ACTIVITIES AND RESEARCHES TO INVESTIGATE THE EFFECT OF SPECIFIC THREATS SUCH AS FOREST FIRE, OVERGRAZING, URBANIZATION, MINES, AND CHANGES IN LAND USE ON THE</p>	HS

CRITERION	EVALUATOR'S SUMMARY COMMENTS	EVALUATOR'S RATING
D. MONITORING AND EVALUATION (OVERALL RATING) SUB CRITERIA (BELOW)	<p>HEALTH OF FORESTS" WAS FOUND IRRELEVANT AND WAS NOT ACCOMPLISHED. THE EVALUATOR THINKS THAT THE BANNING OF ANY ACTIVITY THAT WAS IMPOSED ON THE FOREST FOR SEVERAL YEARS IS A CHANGE IN THE LAND USE THAT MIGHT HAVE AN EFFECT ON THE ECOSYSTEM. THE INVESTIGATIONS ON THE EFFECTS OF SUCH A CHANGE WOULD HAVE BEEN BEYOND THE MANDATE AND TIME FRAME OF THE PROJECT.</p> <p>THE PROJECT COMPLIED WITH ALL M&E REQUIREMENTS. M&E WAS USED AS A MANAGEMENT TOOL IN THE DAY TO DAY RUNNING OF THE PROJECT.</p>	S
<p>D. 1. M&E DESIGN</p>	<p>THE M&E PLAN INCLUDED A BASELINE (INCLUDING DATA, METHODOLOGY, ETC.), SMART INDICATORS AND DATA ANALYSIS SYSTEMS, AND EVALUATION STUDIES AT SPECIFIC TIMES TO ASSESS RESULTS. THE TIME FRAME FOR VARIOUS M&E ACTIVITIES AND STANDARDS FOR OUTPUTS ARE SPECIFIED.</p> <p>THE DESIGN OF THE M&E DOES NOT CONSIDER MONITORING BIODIVERSITY, LEVEL OF AWARENESS AND IMPACT AND ACHEIEVEMENT OF ACTIVITIES PLANNED OR IMPLEMENTED</p>	S
<p>D. 2. M&E PLAN IMPLEMENTATION (USE FOR ADAPTIVE MANAGEMENT)</p>	<p>AN M&E SYSTEM WAS IN PLACE AND FACILITATED TIMELY TRACKING OF RESULTS AND PROGRESS; ANNUAL PROJECT REPORTS AND PROGRESS IMPLEMENTATION REVIEW (PIR) REPORTS WERE COMPLETE, ACCURATE AND WITH WELL JUSTIFIED RATINGS; INFORMATION PROVIDED BY THE M&E SYSTEM WAS USED DURING THE PROJECT TO IMPROVE PROJECT PERFORMANCE AND TO ADAPT TO CHANGING NEEDS; PROJECT HAD AN M&E SYSTEM IN PLACE WITH PROPER TRAINING FOR PARTIES RESPONSIBLE FOR M&E ACTIVITIES.</p> <p>THE M&E SYSTEM DID NOT TAKE INTO CONSIDERATION MONITORING THE BIODIVERSITY WITHIN THE FOREST AND MONITORING THE IMPACT OF THE NEW MANAGEMENT PLAN AND THE NEW ACTIVITIES DEVELOPED.</p> <p>THE M&E DOES NOT PROPOSE ANY TOOL OR MECHANISM TO MEASURE AND MONITOR THE INCREASE IN THE AWARENESS AT THE LEVELS OF THE CONCERNED STAKEHOLDERS.</p>	S
<p>D. 3. BUDGETING AND FUNDING FOR M&E ACTIVITIES</p>	<p>THE M&E WAS PROPERLY BUDGETED (E.G.: TRAVEL FOR EVALUATION MISSION; BUDGET LINE 5500).</p> <p>NO BUDGET WAS ALLOCATED FOR MONITORING IMPACT AND ACHEIEMENT</p>	S

CRITERION	EVALUATOR'S SUMMARY COMMENTS	EVALUATOR'S RATING
OF ACTIVITIES PLANNED OR PROPOSED		
E. CATALYTIC ROLE	<p>THE PROJECT HAS SUCCEEDED IN PLAYING A CATALYTIC ROLE IN IDENTIFYING OTHER FUNDING SOURCES TO FINANCE NEW ACTIVITIES, BASED ON THE OUTCOMES ACHIEVED. THE NEW GRANT PROVIDED BY THE FONDS FRANCAIS POUR L'ENVIRONNEMENT MONDIAL IS ONE OF THE EXAMPLES THAT ILLUSTRATE THE CATALYTIC ROLE PLAYED BY THE PROJECT.</p>	HS
F. PREPARATION AND READINESS	<p>THE PROJECT'S OBJECTIVES AND COMPONENTS ARE CLEAR, PRACTICABLE AND FEASIBLE WITHIN ITS TIMEFRAME. THE CAPACITIES OF EXECUTING INSTITUTION AND COUNTERPARTS WERE PROPERLY CONSIDERED WHEN THE PROJECT WAS DESIGNED. THE PROJECT HAS BUILT UPON THE PREVIOUS INITIATIVES IN THE TANNOURINE FOREST AND THE LESSONS LEARNT WERE PROPERLY INCORPORATED IN THE PROJECT DESIGN.</p>	S
G. COUNTRY OWNERSHIP / DRIVENNESS	<p>THE PROJECT DESIGN AND IMPLEMENTATION WERE IN LINE WITH THE NATIONAL DEVELOPMENT AND ENVIRONMENTAL AGENDAS, THE COMMITMENT OF LEBANON TOWARDS THE INTERNATIONAL AND REGIONAL AGREEMENTS.</p>	HS
H. STAKEHOLDERS INVOLVEMENT/PUBLIC AWARENESS	<p>THE EMAILS AND PHONES RECEIVED FROM THE FOUR PARTNERS HAVE SHOWN A HIGH LEVEL OF APPRECIATION OF THE PROJECT AND ITS ACTIVITIES. THE MECHANISM PUT IN PLACE HAS ALLOWED FOR THE ESTABLISHMENT OF A STRONGER PARTNERSHIP BETWEEN THE DIFFERENT COUNTRIES AND HAS CONFIRMED THE ABSENCE OF THE <i>CEPHALCIA</i> IN THE CONCERNED COUNTRIES.</p> <p>THE MAIN WEAKNESS OF THE PROJECT IS THE LIMITED NUMBER OF ACTIVITIES UNDERTAKEN AT THE REGIONAL LEVEL, AND THE LIMITED BUDGET ALLOCATED TO SUCH ACTIVITIES.</p> <p>THE COLLABORATION/INTERACTIONS BETWEEN THE PROJECT PARTNERS WERE LIMITED TO THE WORKSHOPS AND MEETINGS. OTHER FORMS OF INTERACTIONS COULD NOT HAVE BEEN POSSIBLE IN THE FRAMEWORK OF SUCH A PROJECT.</p> <p>THE COLLABORATION/INTERACTIONS WITH THE LEBANESE PARTNERS WERE VERY FRUITFUL.</p>	S

CRITERION	EVALUATOR'S SUMMARY COMMENTS	EVALUATOR 'S RATING
	<p>THE MOST EFFICIENT PUBLIC AWARENESS ACTIVITIES WERE THOSE UNDERTAKEN IN TANNOURINE, AS THEY HAVE SUCCEEDED IN MOBILIZING THE YOUNG GENERATION AND IN INCREASING THEIR INTEREST IN THE ISSUES RELATED TO THE TCFNR AND IN POSITIVELY CHANGING THE ATTITUDE OF CERTAIN STAKEHOLDERS.</p> <p>OTHER PUBLIC AWARENESS RAISING ACTIVITIES WERE UNDERTAKEN, LIKE A LECTURE DELIVERED IN THE NOTRE DAME UNIVERSITY. THE EFFECTIVENESS OF SUCH AN ACTIVITY IS RATHER LIMITED AS IT IS RESTRAINED TO ONE UNIVERSITY. SIMILAR ACTIVITIES, IN OTHER UNIVERSITIES WOULD HAVE CERTAINLY INCREASED THE EFFECTIVENESS OF THIS AWARENESS RAISING.</p> <p>DESPITE THE GREAT NUMBER OF DVDS AND DOCUMENTS PRODUCED, THEIR DISTRIBUTION WAS RATHER LIMITED. A WIDER AND BROADER DISTRIBUTION COULD HAVE INCREASED THE AWARENESS ON THE RESULTS OF THE PROJECT.</p>	
I. FINANCIAL PLANNING	<p>THE OVERALL BUDGET OF THE PROJECT WAS WELL PLANNED. SOME ACTIVITIES WERE OVER ESTIMATED, AND SOME OTHER HAVE BEEN OMITTED WHICH HAS ALLOWED FOR SOME SAVINGS THAT WERE LATER USED IN NEW ACTIVITIES. THE FINANCIAL CONTROLS, INCLUDING REPORTING AND PLANNING, SEEM TO HAVE BEEN USEFUL ENOUGH TO HELP THE PROJECT MANAGEMENT MAKE THE APPROPRIATE DECISIONS REGARDING THE BUDGET, AND ALLOW FOR A PROPER AND TIMELY FLOW OF FUNDS FOR THE PAYMENT OF SATISFACTORY PROJECT DELIVERABLES.</p>	S
J. IMPLEMENTATION APPROACH	<p>THE PROJECT IMPLEMENTATION MECHANISMS OUTLINED IN THE PROJECT DOCUMENT WERE CLOSELY FOLLOWED.</p> <p>THE PROJECT DOCUMENT WAS CLEAR AND REALISTIC ENOUGH TO ENABLE THE EFFECTIVE AND EFFICIENT IMPLEMENTATION. THE PROJECT WAS EXECUTED ACCORDING TO THE PLAN, WITH ONLY TWO CHANGES:</p> <p>A. THE “ACTIVITY 2: CARRY OUT ACTIVITIES AND RESEARCHES TO INVESTIGATE THE EFFECT OF SPECIFIC THREATS SUCH AS FOREST FIRE, OVERGRAZING, URBANIZATION, MINES, AND CHANGES IN LAND USE ON THE HEALTH OF FORESTS” WAS ABANDONED, AS IT WAS CONSIDERED IRRELEVANT TO THE PROJECT.</p> <p>B. THE ASSESSMENT PLANNED TO TAKE PLACE IN SYRIA WAS NOT CARRIED OUT,</p>	HS

CRITERION	EVALUATOR'S SUMMARY COMMENTS	EVALUATOR 'S RATING
	<p>BECAUSE OF THE LACK OF COOPERATION FROM THE SYRIAN COUNTERPART.</p> <p>THESE CHANGES DID NOT AFFECT THE SMOOTH RUNNING OF THE PROJECT.</p> <p>THE EFFECTIVENESS AND EFFICIENCY AND ADAPTABILITY OF PROJECT MANAGEMENT AND THE SUPERVISION OF PROJECT ACTIVITIES / PROJECT EXECUTION ARRANGEMENTS SEEM TO BE HIGHLY SATISFACTORY AT ALL LEVELS. NO MAJOR PROBLEM SEEMS TO HAVE ARISEN; THIS IS CONFIRMED BY ALL THE REPORTS AND THE FEEDBACKS FROM THE PARTNERS.</p>	
K. UNEP SUPERVISION AND BACKSTOPPING	<p>THE BACKSTOPPING OFFICER HAS PROVIDED THE NECESSARY SUPPORT WHENEVER NEEDED. THE DOCUMENTS WERE REVIEWED; THE MATERIAL TO BE PRINTED WAS REVISED AND COMMENTED UPON.</p> <p>THE CONCERNED UNIT IN UNEP/D GEF SEEMS TO HAVE BEEN EFFICIENT IN PROVIDING THE NECESSARY SUPERVISION AND ADMINISTRATIVE AND FINANCIAL SUPPORT.</p>	HS
OVERALL RATING		HS

6. LESSONS LEARNED

- The negative attitude expressed by some partners or stakeholders at the beginning of the project, may change during the course of the project, if the appropriate awareness raising tools are used, and if those people are approached in a positive and constructive manner.
- The use of pheromones could lead to a faster detection of the insect outbreaks and a more efficient and proactive decisions making regarding the interventions to be undertaken.
- In severe outbreaks, natural enemies may not be very efficient in controlling *Cephalcia* population, and an Integrated Pest Management program could be more feasible.
- Awareness raising activities and field visits to school children may strongly contribute to the increase in the sense of ownership of the local populations and to the sensitization of the youth to the environmental matters.

7. RECOMMENDATIONS

- Investigations should be carried on the effect of land use change on the outbreak of the *Cephalcia tannourinensis*. The land has long been used for local forestry activities, goat grazing, agriculture and small industry. The changes in life styles, the increasing environmental concerns and the low income generated by those activities, have led to a drastic change in the local land use practices. This change in the land use could be an additional cause of the outbreak of the insect. Dendrochronology could be used to analyse the different stresses caused on the forest in the past years. Tree ring analysis could be an interesting tool to study the history of the forest and to forecast any recurring event. The investigations and the dendrochronological studies should be undertaken by the a scientific institution (AUB for example) in close collaboration with the Ministry of Environment and the Tannourine committee. This work should be initiated as soon as the necessary funding is available.
- Training local women groups on food processing and home based food industries, should be broadened to cover new products and to increase the range of products sold on the local market. This activity should be initiated by the Tannourine committee, or by the local women groups themselves. It should be carried out periodically, according to the needs of the women groups. The organisation who has provided the first training could be asked to undertake further trainings, but other organistaion could also be identified
- The awareness raising material should be distributed in a more efficient manner. The MOE should distribute the DVDs and other material produced to all universities and relevant faculties, to all concerned ministries and departments within ministries and to all concerned NGOs. Awareness lectures should be organised in all universities. These activities could be carried out before the summer of 2009 at no cost.
- The students trained in the framework of the project, who became junior experts in their field, should be better integrated in related structures or organizations in order to benefit of their acquired expertise in the most efficient way. Unfortunately, this recommendation may not be possible to achieve because of the current freeze in the civil service system in Lebanon. However, the trained experts could be invited to apply to certain positions whenever there are project vacancies in any of the concerned institutions or organisations.

8. ANNEXES

1. Terms of Reference
2. Project Log frame
3. List of interviewees and feedbacks received
4. Financial reporting
5. List of documents consulted
6. Expertise of the evaluator. (brief CV).

ANNEX 1: TERMS OF REFERENCE

Terminal Evaluation of the UNEP GEF project “Development of an Action Plan for Integrated Management of Forests and Assessment of Insect Infestation in Cedar Forests in the Mediterranean Region and with Particular Emphasis on the Tannourine-Hadath El-Jebbeh Cedars Forest.”

GF/2010-03-16 (4731)

TERMS OF REFERENCE FOR THE EVALUATION

1. Objective and Scope of the Evaluation

The objective of this terminal evaluation is to determine the extent to which the project objectives were achieved, or are expected to be achieved, and assess if the project has led to any other positive or negative consequences. If possible the extent and magnitude of any project impacts to date will be documented and the likelihood of future impacts will be determined. The evaluation will also assess project performance and the implementation of planned project activities and planned outputs against actual results. The evaluation will focus on the following main questions:

Has the project:

- Developed a sustainable management plan that addresses possible threats to the ecosystem of cedar forests and means of removal of these threats?
- Defined the causes of Cephalaria outbreak in Tannourine and assessed the possible threats of similar outbreaks in cedar forests in the Mediterranean region?
- Developed institutional and community knowledge and capacity for the management of cedar forests?

2. Methods

This terminal evaluation will be conducted as an in-depth evaluation using a participatory approach whereby the UNEP/DGEF Task Manager, key representatives of the executing agencies and other relevant staff are kept informed and consulted throughout the evaluation. The consultant will liaise with the UNEP/EOU and the UNEP/DGEF Task Manager on any logistic and/or methodological issues to properly conduct the review in as independent a way as possible, given the circumstances and resources offered. The draft report will be circulated to UNEP/DGEF Task Manager, key representatives of the executing agencies and the UNEP/EOU. Any comments or responses to the draft report will be sent to UNEP / EOU for collation and the consultant will be advised of any necessary or suggested revisions.

The findings of the evaluation will be based on the following:

1. A desk review of project documents including, but not limited to:
 - (a) The project documents, outputs, monitoring reports (such as progress and financial reports to UNEP and GEF annual Project Implementation Review reports) and relevant correspondence.
 - (b) Project Country Reports
 - (c) Other project-related material produced by the project staff or partners.
 - (d) Relevant material published on the project web-site: www.arztannourine.org
2. Interviews with project management and technical support including

- Lina Yamout, MOE
 - Nasri Kawar, Nabil Nemer, AUB
 - Charbel Lahoud, Jane Bal, Sarah Ezzedine, Lara Samaha (graduate students funded by project , AUB)
 - Members of the local and the project Tannourine Steering Committee
3. Interviews and Telephone interviews with intended users for the project outputs and other stakeholders involved with this project, including in the participating countries from the region (Algeria, Cyprus, Morocco, Syria and Turkey) and international bodies (GISP). The Consultant shall determine whether to seek additional information and opinions from representatives of donor agencies and other organisations. As appropriate, these interviews could be combined with an email questionnaire.
 4. Interviews with the UNEP/DGEF project task manager and Fund Management Officer, and other relevant staff in UNEP dealing with Biodiversity related activities as necessary. The Consultant shall also gain broader perspectives from discussions with relevant GEF Secretariat staff if deemed of added value.
 5. Field visits to project staff and project site
 6. Evaluator’s vetting of the third and final Tracking Tool for Reporting Progress at Protected Area Sites: Data Sheet completed for this project (Draft to be prepared by project team in advance of evaluation)

Key Evaluation principles.

In attempting to evaluate any outcomes and impacts that the project may have achieved, evaluators should remember that the project’s performance should be assessed by considering the difference between the answers to two simple questions “*what happened?*” and “*what would have happened anyway?*”. These questions imply that there should be consideration of the baseline conditions and trends in relation to the intended project outcomes and impacts. In addition it implies that there should be plausible evidence to **attribute** such outcomes and impacts **to the actions of the project**.

Sometimes, adequate information on baseline conditions and trends is lacking. In such cases this should be clearly highlighted by the evaluator, along with any simplifying assumptions that were taken to enable the evaluator to make informed judgements about project performance.

3. Project Ratings

The success of project implementation will be rated on a scale from ‘highly unsatisfactory’ to ‘highly satisfactory’. In particular the evaluation shall **assess and rate** the project with respect to the eleven categories defined below:¹

A. Attainment of objectives and planned results:

The evaluation should assess the extent to which the project's major relevant objectives were effectively and efficiently achieved or are expected to be achieved and their relevance. The “achievement” indicators provided in the log frame of the project document should be used

¹ However, the views and comments expressed by the evaluator need not be restricted to these items.

together with any additional monitoring tools including the GEF Biodiversity Tracking Tools².

- *Effectiveness*: Evaluate how, and to what extent, the stated project objectives have been met, taking into account the “achievement indicators”. The analysis of outcomes achieved should include, *inter alia*, an assessment of the extent to which the project has directly or indirectly assisted policy- and decision-makers to apply information supplied by biodiversity indicators in their national planning and decision-making. In particular:
 - Evaluate the immediate impact of the project on improvements in management effectiveness of the Tannourine-Hadath El-Jebbeh Cedars Forest.
 - As far as possible, also assess the potential longer-term impacts considering that the evaluation is taking place upon completion of the project and that longer term impact is expected to be seen in a few years time. Frame recommendations to enhance future project impact in this context.
- *Relevance*: In retrospect, were the project’s outcomes consistent with the focal areas/operational program strategies? Ascertain the nature and significance of the contribution of the project outcomes to the CBD and the wider portfolio of the GEF.
- *Efficiency*: Was the project cost effective? Was the project the least cost option? Was the project implementation delayed and if it was, then did that affect cost-effectiveness? Assess the contribution of cash and in-kind co-financing to project implementation and to what extent the project leveraged additional resources. Did the project build on earlier initiatives, did it make effective use of available scientific and / or technical information. Wherever possible, the evaluator should also compare the cost-time vs. outcomes relationship of the project with that of other similar projects.

B. Sustainability:

Sustainability is understood as the probability of continued long-term project-derived outcomes and impacts after the GEF project funding ends. The evaluation will identify and assess the key conditions or factors that are likely to contribute or undermine the persistence of benefits after the project ends. Some of these factors might be outcomes of the project, e.g. stronger institutional capacities or better informed decision-making. Other factors will include contextual circumstances or developments that are not outcomes of the project but that are relevant to the sustainability of outcomes. The evaluation should ascertain to what extent follow-up work has been initiated and how project outcomes will be sustained and enhanced over time.

Five aspects of sustainability should be addressed: financial, socio-political, institutional frameworks and governance, environmental (if applicable). The following questions provide guidance on the assessment of these aspects:

1. *Financial resources*. Are there any financial risks that may jeopardize sustenance of project outcomes? What is the likelihood that financial and economic resources will not be available once the GEF assistance ends (resources can be from multiple sources, such as the public and private sectors, income generating activities, and trends that may indicate that it is likely that in future there will be adequate financial resources for sustaining project’s outcomes)? To what extent are the outcomes of the project dependent on continued financial support?
2. *Socio-political*: Are there any social or political risks that may jeopardize sustenance of project outcomes? What is the risk that the level of stakeholder

² http://gefweb.org/projects/Focal_Areas/bio/bio_tracking_tools.html. The evaluator should comment on the relevance of these tracking tools to the overall approach adopted by the project.

ownership will be insufficient to allow for the project outcomes to be sustained? Do the various key stakeholders see that it is in their interest that the project benefits continue to flow? Is there sufficient public / stakeholder awareness in support of the long term objectives of the project?

3. *Institutional framework and governance.* To what extent is the sustenance of the outcomes of the project dependent on issues relating to institutional frameworks and governance? What is the likelihood that institutional and technical achievements, legal frameworks, policies and governance structures and processes will allow for, the project outcomes/benefits to be sustained? While responding to these questions consider if the required systems for accountability and transparency and the required technical know-how are in place.
4. *Environmental.* Are there any environmental risks that can undermine the future flow of project environmental benefits? The TE should assess whether certain activities in the project area will pose a threat to the sustainability of the project outcomes. For example; construction of dam in a protected area could inundate a sizable area and thereby neutralize the biodiversity-related gains made by the project; or, a newly established pulp mill might jeopardise the viability of nearby protected forest areas by increasing logging pressures; or a vector control intervention may be made less effective by changes in climate and consequent alterations to the incidence and distribution of malarial mosquitoes.

C. Achievement of outputs and activities:

1. Delivered outputs: Assessment of the project's success in producing each of the programmed outputs, both in quantity and quality as well as usefulness and timeliness.
2. Assess the soundness and effectiveness of the methodologies used for developing the technical documents and related management options in the participating countries and targeted project area.
3. Assess to what extent the project outputs produced have the weight of scientific authority / credibility, necessary to influence policy and decision-makers, particularly at the local, national and regional level.

D. Catalytic Role

Replication and catalysis. What examples are there of replication and catalytic outcomes? Replication approach, in the context of GEF projects, is defined as lessons and experiences coming out of the project that are replicated or scaled up in the design and implementation of other projects. Replication can have two aspects, replication proper (lessons and experiences are replicated in different geographic area) or scaling up (lessons and experiences are replicated within the same geographic area but funded by other sources). Specifically:

Evaluation should describe the catalytic or replication actions that the project carried out.

E. Assessment monitoring and evaluation systems.

The evaluation shall include an assessment of the quality, application and effectiveness of project monitoring and evaluation plans and tools, including an assessment of risk management based on the assumptions and risks identified in the project document. The Terminal Evaluation will assess whether the project met the minimum requirements for 'project design of M&E' and 'the application of the Project M&E plan' (see minimum requirements 1&2 in Annex 4). GEF projects must budget adequately for execution of the M&E plan, and provide adequate resources during implementation of the M&E plan. Project

managers are also expected to use the information generated by the M&E system during project implementation to adapt and improve the project.

M&E during project implementation

1. *M&E design.* Projects should have sound M&E plans to monitor results and track progress towards achieving project objectives. An M&E plan should include a baseline (including data, methodology, etc.), SMART indicators (see Annex 4) and data analysis systems, and evaluation studies at specific times to assess results. The time frame for various M&E activities and standards for outputs should have been specified.
2. *M&E plan implementation.* A Terminal Evaluation should verify that: an M&E system was in place and facilitated timely tracking of results and progress towards projects objectives throughout the project implementation period (perhaps through use of a logframe or similar); annual project reports and Progress Implementation Review (PIR) reports were complete, accurate and with well justified ratings; that the information provided by the M&E system was used during the project to improve project performance and to adapt to changing needs; and that projects had an M&E system in place with proper training for parties responsible for M&E activities.
3. *Budgeting and Funding for M&E activities.* The terminal evaluation should determine whether support for M&E was budgeted adequately and was funded in a timely fashion during implementation.

F. Preparation and Readiness

Were the project's objectives and components clear, practicable and feasible within its timeframe? Were the capacities of executing institution and counterparts properly considered when the project was designed? Were lessons from other relevant projects properly incorporated in the project design? Were the partnership arrangements properly identified and the roles and responsibilities negotiated prior to project implementation? Were counterpart resources (funding, staff, and facilities), enabling legislation, and adequate project management arrangements in place?

G. Country ownership / drivenness:

This is the relevance of the project to national development and environmental agendas, recipient country commitment, and regional and international agreements. The evaluation will:

1. Assess the level of country ownership. Specifically, the evaluator should assess whether the project was effective in providing and communicating information that catalyzed action in the surrounding local communities of the project area and at the national level with respect to improving management of the focal ecosystem.
2. Assess the level of country commitment to the generation and use of management plan and supporting technical reports for decision-making during and after the project,

H. Stakeholder participation / public awareness:

This consists of three related and often overlapping processes: information dissemination, consultation, and "stakeholder" participation. Stakeholders are the individuals, groups, institutions, or other bodies that have an interest or stake in the outcome of the GEF- financed

project. The term also applies to those potentially adversely affected by a project (1. communities surrounding the Tannourine Forest Reserve; 2. the countries cooperating with the project from the pest management perspective). The evaluation will specifically:

1. Assess the mechanisms put in place by the project for identification and engagement of stakeholders in each participating country and establish, in consultation with the stakeholders, whether this mechanism was successful, and identify its strengths and weaknesses.
2. Assess the degree and effectiveness of collaboration/interactions between the various project partners and institutions during the course of implementation of the project.
3. Assess the degree and effectiveness of any various public awareness activities that were undertaken during the course of implementation of the project.

I. Financial Planning

Evaluation of financial planning requires assessment of the quality and effectiveness of financial planning and control of financial resources throughout the project's lifetime. Evaluation includes actual project costs by activities compared to budget (variances), financial management (including disbursement issues), and co-financing. The evaluation should:

1. Assess the strength and utility of financial controls, including reporting, and planning to allow the project management to make informed decisions regarding the budget and allow for a proper and timely flow of funds for the payment of satisfactory project deliverables.
2. Present the major findings from the financial audit if one has been conducted.
3. Identify and verify the sources of co-financing as well as leveraged and associated financing (in co-operation with the IA and EA).
4. Assess whether the project has applied appropriate standards of due diligence in the management of funds and financial audits.
5. The evaluation should also include a breakdown of final actual costs and co-financing for the project prepared in consultation with the relevant UNON/DGEF Fund Management Officer of the project (table attached in Annex 1 Co-financing and leveraged resources).

J. Implementation approach:

This includes an analysis of the project's management framework, adaptation to changing conditions (adaptive management), partnerships in implementation arrangements, changes in project design, and overall project management. The evaluation will:

1. Ascertain to what extent the project implementation mechanisms outlined in the project document have been closely followed. In particular, assess the role of the various committees established and whether the project document was clear and realistic to enable effective and efficient implementation, whether the project was executed according to the plan and how well the management was able to adapt to changes during the life of the project to enable the implementation of the project.
2. Evaluate the effectiveness and efficiency and adaptability of project management and the supervision of project activities / project execution arrangements at all levels (1) policy decisions: Steering Group; (2) day to day project management in each of the country executing agencies and UNEP-WCMC.

K. UNEP Supervision and Backstopping

1. Assess the effectiveness of supervision and administrative and financial support provided by UNEP/DGEF.
2. Identify administrative, operational and/or technical problems and constraints that influenced the effective implementation of the project.

The *ratings will be presented in the form of a table*. Each of the eleven categories should be rated separately with **brief justifications** based on the findings of the main analysis. An overall rating for the project should also be given. The following rating system is to be applied:

HS	= Highly Satisfactory
S	= Satisfactory
MS	= Moderately Satisfactory
MU	= Moderately Unsatisfactory
U	= Unsatisfactory
HU	= Highly Unsatisfactory

4. Evaluation report format and review procedures

The report should be brief, to the point and easy to understand. It must explain; the purpose of the evaluation, exactly what was evaluated and the methods used. The report must highlight any methodological limitations, identify key concerns and present evidence-based findings, consequent conclusions, recommendations and lessons. The report should be presented in a way that makes the information accessible and comprehensible and include an executive summary that encapsulates the essence of the information contained in the report to facilitate dissemination and distillation of lessons.

The evaluation will rate the overall implementation success of the project and provide individual ratings of the eleven implementation aspects as described in Section 1 of this TOR. *The ratings will be presented in the format of a table with brief justifications based on the findings of the main analysis.*

Evidence, findings, conclusions and recommendations should be presented in a complete and balanced manner. Any dissident views in response to evaluation findings will be appended in an annex. The evaluation report shall be written in English, be of no more than 50 pages (excluding annexes), use numbered paragraphs and include:

- i) An **executive summary** (no more than 3 pages) providing a brief overview of the main conclusions and recommendations of the evaluation;
- ii) **Introduction and background** giving a brief overview of the evaluated project, for example, the objective and status of activities; The GEF Monitoring and Evaluation Policy, 2006, requires that a TE report will provide summary information on when the evaluation took place; places visited; who was involved; the key questions; and, the methodology.
- iii) **Scope, objective and methods** presenting the evaluation's purpose, the evaluation criteria used and questions to be addressed;
- iv) **Project Performance and Impact** providing *factual evidence* relevant to the questions asked by the evaluator and interpretations of such evidence. This is the main substantive section of the report. The evaluator should provide a commentary and analysis on all eleven evaluation aspects (A – K above).

- v) **Conclusions and rating** of project implementation success giving the evaluator's concluding assessments and ratings of the project against given evaluation criteria and standards of performance. The conclusions should provide answers to questions about whether the project is considered good or bad, and whether the results are considered positive or negative. The ratings should be provided with a brief narrative comment in a table (see Annex 1);
- vi) **Lessons (to be) learned** presenting general conclusions from the standpoint of the design and implementation of the project, based on good practices and successes or problems and mistakes. Lessons should have the potential for wider application and use. All lessons should 'stand alone' and should:
 - Briefly describe the context from which they are derived
 - State or imply some prescriptive action;
 - Specify the contexts in which they may be applied (if possible, who when and where)
- vii) **Recommendations** suggesting *actionable* proposals for improvement of the current project. In general, Terminal Evaluations are likely to have very few (perhaps two or three) actionable recommendations.

Prior to each recommendation, the issue(s) or problem(s) to be addressed by the recommendation should be clearly stated.

A high quality recommendation is an actionable proposal that is:

1. Feasible to implement within the timeframe and resources available
2. Commensurate with the available capacities of project team and partners
3. Specific in terms of who would do what and when
4. Contains results-based language (i.e. a measurable performance target)
5. Includes a trade-off analysis, when its implementation may require utilizing significant resources that would otherwise be used for other project purposes.

- viii) **Annexes** may include additional material deemed relevant by the evaluator but must include:
 1. The Evaluation Terms of Reference,
 2. A list of interviewees, and evaluation timeline
 3. A list of documents reviewed / consulted
 4. Summary co-finance information and a statement of project expenditure by activity
 5. The expertise of the evaluation team. (brief CV).

TE reports will also include any response / comments from the project management team and/or the country focal point regarding the evaluation findings or conclusions as an annex to the report, however, such will be appended to the report by UNEP EOU.

Examples of UNEP GEF Terminal Evaluation Reports are available at www.unep.org/eou

Review of the Draft Evaluation Report

Draft reports submitted to UNEP EOU are shared with the corresponding Programme or Project Officer and his or her supervisor for initial review and consultation. The DGEF staff and senior Executing Agency staff are allowed to comment on the draft evaluation report. They may provide feedback on any errors of fact and may highlight the significance of such errors in any conclusions. The consultation also seeks feedback on the proposed recommendations. UNEP EOU collates all review comments and provides them to the evaluators for their consideration in preparing the final version of the report.

5. Submission of Final Terminal Evaluation Reports.

The final report shall be submitted in electronic form in MS Word format and should be sent to the following persons:

Segbedzi Norgbey, Chief,
UNEP Evaluation and Oversight Unit
P.O. Box 30552-00100
Nairobi, Kenya
Tel.: (254-20) 7624181
Fax: (254-20) 7623158
Email: segbedzi.norgbey@unep.org

With a copy to:

Maryam Niamir-Fuller, Director
UNEP/Division of GEF Coordination
P.O. Box 30552-00100
Nairobi, Kenya
Tel: + 254-20-7624166
Fax: + 254-20-623158/4042
Email: maryam.niamir-fuller_@unep.org

Kristin McLaughlin, GEF Liaison Officer/Task Manager
UNEP, Suite 300
1707 H Street, NW
Washington DC 20006
Tel. + 1 202-974-1312
Fax. + 1 202 223-2004
Email: km@rona.unep.org

Gabriel Labbate
Regional Coordinator UNEP/GEF
Regional Office for Latin America and the Caribbean
United Nations Environment Programme
Panama City
Phone: (507) 305-3168
Fax: (507) 305-3105
Email: Gabriel.Labbate@pnuma.org

The Final evaluation will also be copied to the following GEF National Focal Points.

Berj HATJIAN
Director General
Ministry of Environment
P.O. Box 11-2727
Beirut
Lebanon
TEL: 961 1 976 555 ext. 500
FAX: 961 1 976 530

E-mail:dgmoe@moe.gov.lb

Nancy KHOURY

Acting Head of Division

Public Relations and External Affairs

Directorate General of Environment, Ministry of Environment

P.O. Box 11-2727, Lazarieh Building

Beirut, Lebanon

TEL: 961 1 976 555 Ext. 418

FAX: 961 1 976 530

E-mail:n.khoury@moe.gov.lb

The final evaluation report will be published on the Evaluation and Oversight Unit's web-site www.unep.org/eou and may be printed in hard copy. Subsequently, the report will be sent to the GEF Office of Evaluation for their review, appraisal and inclusion on the GEF website.

6. Resources and schedule of the evaluation

This final evaluation will be undertaken by an international evaluator contracted by the Evaluation and Oversight Unit, UNEP. The contract for the evaluator will begin on 16th June 2008 and end on 27th July 2008 (23 days) spread over 6 weeks (including 10 days fieldwork Lebanon). The evaluator will submit a draft report on 11th July 2008 to UNEP/EOU, the UNEP/DGEF Task Manager, and key representatives of the executing agencies. Any comments or responses to the draft report will be sent to UNEP / EOU for collation and the consultant will be advised of any necessary revisions. Comments to the final draft report will be sent to the consultant by 21st July 2008 after which, the consultant will submit the final report no later than 25th July 2008.

The evaluator will after an initial telephone briefing with EOU and UNEP/GEF conduct initial desk review work and later travel to Lebanon and meet with project staff at the beginning of the evaluation.

In accordance with UNEP/GEF policy, all GEF projects are evaluated by independent evaluators contracted as consultants by the EOU. The evaluator should have the following qualifications:

The evaluator should not have been associated with the design and implementation of the project in a paid capacity. The evaluator will work under the overall supervision of the Chief, Evaluation and Oversight Unit, UNEP. The evaluator should be an international expert in biodiversity management or conservation with a sound understanding of biodiversity issues. The consultant should have the following minimum qualifications: (i) experience in international biodiversity and forest issues, particularly protected area and/or pest management; (ii) experience with management and implementation of research projects; (iii) experience with project evaluation. Knowledge of UNEP programmes and GEF activities is desirable. Fluency in oral and written English and Arabic is a must.

7. Schedule Of Payment

Lump-Sum Option

The evaluator will receive an initial payment of US \$1,500 of the total amount due upon signature of the contract to cater for local transportation and communication. A further 50% will be paid upon submission of the draft report. A final payment of 50% will be made upon satisfactory completion of work. The fee is payable under the individual Special Service Agreement (SSA) of the evaluator and **is inclusive** of all expenses such as travel, accommodation and incidental expenses.

In case, the evaluator cannot provide the products in accordance with the TORs, the timeframe agreed, or his products are substandard, the payment to the evaluator could be withheld, until such a time the products are modified to meet UNEP's standard. In case the evaluator fails to submit a satisfactory final product to UNEP, the product prepared by the evaluator may not constitute the evaluation report.

Annex 1. OVERALL RATINGS TABLE

CRITERION	EVALUATOR'S SUMMARY COMMENTS	EVALUATOR'S RATING
A. ATTAINMENT OF PROJECT OBJECTIVES AND RESULTS (OVERALL RATING) SUB CRITERIA (BELOW)		
<p style="text-align: center;">A. 1. EFFECTIVENESS</p> <p style="text-align: center;">A. 2. RELEVANCE</p> <p style="text-align: center;">A. 3. EFFICIENCY</p>		
B. SUSTAINABILITY OF PROJECT OUTCOMES (OVERALL RATING) SUB CRITERIA (BELOW)		
<p style="text-align: center;">B. 1. FINANCIAL</p> <p style="text-align: center;">B. 2. SOCIO POLITICAL</p> <p style="text-align: center;">B. 3. INSTITUTIONAL FRAMEWORK AND GOVERNANCE</p> <p style="text-align: center;">B. 4. ECOLOGICAL</p>		
C. ACHIEVEMENT OF OUTPUTS AND ACTIVITIES D. MONITORING AND EVALUATION (OVERALL RATING) SUB CRITERIA (BELOW)		
<p style="text-align: center;">D. 1. M&E DESIGN</p> <p style="text-align: center;">D. 2. M&E PLAN IMPLEMENTATION (USE FOR ADAPTIVE MANAGEMENT)</p> <p style="text-align: center;">D. 3. BUDGETING AND FUNDING FOR M&E ACTIVITIES</p>		
E. CATALYTIC ROLE F. PREPARATION AND READINESS G. COUNTRY OWNERSHIP / DRIVENNESS H. STAKEHOLDERS INVOLVEMENT		

CRITERION	EVALUATOR'S SUMMARY COMMENTS	EVALUATOR'S RATING
I. FINANCIAL PLANNING		
J. IMPLEMENTATION APPROACH		
K. UNEP SUPERVISION AND BACKSTOPPING		

RATING OF PROJECT OBJECTIVES AND RESULTS

Highly Satisfactory (HS): The project had no shortcomings in the achievement of its objectives, in terms of relevance, effectiveness or efficiency.

Satisfactory (S): The project had minor shortcomings in the achievement of its objectives, in terms of relevance, effectiveness or efficiency.

Moderately Satisfactory (MS): The project had moderate shortcomings in the achievement of its objectives, in terms of relevance, effectiveness or efficiency.

Moderately Unsatisfactory (MU): The project had significant shortcomings in the achievement of its objectives, in terms of relevance, effectiveness or efficiency.

Unsatisfactory (U) The project had major shortcomings in the achievement of its objectives, in terms of relevance, effectiveness or efficiency.

Highly Unsatisfactory (HU): The project had severe shortcomings in the achievement of its objectives, in terms of relevance, effectiveness or efficiency.

Please note: Relevance and effectiveness will be considered as critical criteria. The overall rating of the project for achievement of objectives and results **may not be higher** than the lowest rating on either of these two criteria. Thus, to have an overall satisfactory rating for outcomes a project must have at least satisfactory ratings on both relevance and effectiveness.

RATINGS ON SUSTAINABILITY

- A. Sustainability will be understood as the probability of continued long-term outcomes and impacts after the GEF project funding ends. The Terminal evaluation will identify and assess the key conditions or factors that are likely to contribute or undermine the persistence of benefits after the project ends. Some of these factors might be outcomes of the project, i.e. stronger institutional capacities, legal frameworks, socio-economic incentives /or public awareness. Other factors will include contextual circumstances or developments that are not outcomes of the project but that are relevant to the sustainability of outcomes..

Rating system for sustainability sub-criteria

On each of the dimensions of sustainability of the project outcomes will be rated as follows.

Likely (L): There are no risks affecting this dimension of sustainability.

Moderately Likely (ML). There are moderate risks that affect this dimension of sustainability.

Moderately Unlikely (MU): There are significant risks that affect this dimension of sustainability

Unlikely (U): There are severe risks that affect this dimension of sustainability.

According to the GEF Office of Evaluation, all the risk dimensions of sustainability are deemed critical. Therefore, overall rating for sustainability will not be higher than the rating of the dimension with lowest ratings. For example, if a project has an Unlikely rating in any of the dimensions then its overall rating cannot be higher

than Unlikely, regardless of whether higher ratings in other dimensions of sustainability produce a higher average.

RATINGS OF PROJECT M&E

Monitoring is a continuing function that uses systematic collection of data on specified indicators to provide management and the main stakeholders of an ongoing project with indications of the extent of progress and achievement of objectives and progress in the use of allocated funds. Evaluation is the systematic and objective assessment of an on-going or completed project, its design, implementation and results. Project evaluation may involve the definition of appropriate standards, the examination of performance against those standards, and an assessment of actual and expected results.

The Project monitoring and evaluation system will be rated on ‘M&E Design’, ‘M&E Plan Implementation’ and ‘Budgeting and Funding for M&E activities’ as follows:

- Highly Satisfactory (HS): There were no shortcomings in the project M&E system.
- Satisfactory(S): There were minor shortcomings in the project M&E system.
- Moderately Satisfactory (MS): There were moderate shortcomings in the project M&E system.
- Moderately Unsatisfactory (MU): There were significant shortcomings in the project M&E system.
- Unsatisfactory (U): There were major shortcomings in the project M&E system.
- Highly Unsatisfactory (HU): The Project had no M&E system.

“M&E plan implementation” will be considered a critical parameter for the overall assessment of the M&E system. The overall rating for the M&E systems will not be higher than the rating on “M&E plan implementation.”

All other ratings will be on the GEF six point scale.

GEF PERFORMANCE DESCRIPTION

- HS = HIGHLY SATISFACTORY**
- S = SATISFACTORY**
- MS = MODERATELY SATISFACTORY**
- MU = MODERATELY UNSATISFACTORY**
- U = UNSATISFACTORY**
- HU = HIGHLY UNSATISFACTORY**

Annex 2. Co-financing and Leveraged Resources

Co-financing (basic data to be supplied to the consultant for verification)

Co financing (Type/Source)	IA own Financing (mill US\$)		Government (mill US\$)		Other* (mill US\$)		Total (mill US\$)		Total Disbursement (mill US\$)	
	Planned	Actual	Planned	Actual	Planned	Actual	Planned	Actual	Planned	Actual
- Grants										
- Loans/Concessional (compared to market rate)										
- Credits										
- Equity investments										
- In-kind support										
- Other (*)										
-										
-										
-										
-										
Totals										

* Other is referred to contributions mobilized for the project from other multilateral agencies, bilateral development cooperation agencies, NGOs, the private sector and beneficiaries.

Leveraged Resources

Leveraged resources are additional resources—beyond those committed to the project itself at the time of approval—that are mobilized later as a direct result of the project. Leveraged resources can be financial or in-kind and they may be from other donors, NGO's, foundations, governments, communities or the private sector. Please briefly describe the resources the project has leveraged since inception and indicate how these resources are contributing to the project's ultimate objective.

Table showing final actual project expenditure by activity to be supplied by the UNEP Fund management Officer. (insert here)

Annex 3

Review of the Draft Report

Draft reports submitted to UNEP EOU are shared with the corresponding Programme or Project Officer and his or her supervisor for initial review and consultation. The DGEF staff and senior Executing Agency staff provide comments on the draft evaluation report. They may provide feedback on any errors of fact and may highlight the significance of such errors in any conclusions. The consultation also seeks agreement on the findings and recommendations. UNEP EOU collates the review comments and provides them to the evaluators for their consideration in preparing the final version of the report. General comments on the draft report with respect to compliance with these TOR are shared with the reviewer.

Quality Assessment of the Evaluation Report

All UNEP GEF Mid Term Reports are subject to quality assessments by UNEP EOU. These apply GEF Office of Evaluation quality assessment and are used as a tool for providing structured feedback to the evaluator.

The quality of the draft evaluation report is assessed and rated against the following criteria:

GEF Report Quality Criteria	UNEP EOU Assessment	Rating
A. Did the report present an assessment of relevant outcomes and achievement of project objectives in the context of the focal area program indicators if applicable?		
B. Was the report consistent and the evidence complete and convincing and were the ratings substantiated when used?		
C. Did the report present a sound assessment of sustainability of outcomes?		
D. Were the lessons and recommendations supported by the evidence presented?		
E. Did the report include the actual project costs (total and per activity) and actual co-financing used?		
F. Did the report include an assessment of the quality of the project M&E system and its use for project management?		
UNEP EOU additional Report Quality Criteria	UNEP EOU Assessment	Rating
G. Quality of the lessons: Were lessons readily applicable in other contexts? Did they suggest prescriptive action?		
H. Quality of the recommendations: Did recommendations specify the actions necessary to correct existing conditions or improve operations ('who?' 'what?' 'where?' 'when?'). Can they be implemented? Did the recommendations specify a goal and an associated performance indicator?		
I. Was the report well written? (clear English language and grammar)		
J. Did the report structure follow EOU guidelines, were all requested Annexes included?		
K. Were all evaluation aspects specified in the TORs adequately addressed?		
L. Was the report delivered in a timely manner		

GEF Quality of the MTE report = 0.3*(A + B) + 0.1*(C+D+E+F)

EOU assessment of MTE report = 0.3*(G + H) + 0.1*(I+J+K+L)

Combined quality Rating = (2* 'GEF EO' rating + EOU rating)/3

The Totals are rounded and converted to the scale of HS to HU

Rating system for quality of terminal evaluation reports

A number rating 1-6 is used for each criterion: Highly Satisfactory = 6, Satisfactory = 5, Moderately Satisfactory = 4, Moderately Unsatisfactory = 3, Unsatisfactory = 2, Highly Unsatisfactory = 1, and unable to assess = 0.

Annex 4 GEF Minimum requirements for M&E

Minimum Requirement 1: Project Design of M&E³

All projects must include a concrete and fully budgeted monitoring and evaluation plan by the time of Work Program entry (full-sized projects) or CEO approval (medium-sized projects). This plan must contain at a minimum:

- SMART (see below) indicators for project implementation, or, if no indicators are identified, an alternative plan for monitoring that will deliver reliable and valid information to management
- SMART indicators for results (outcomes and, if applicable, impacts), and, where appropriate, corporate-level indicators
- A project baseline, with:
 - a description of the problem to address
 - indicator data
 - or, if major baseline indicators are not identified, an alternative plan for addressing this within one year of implementation
- An M&E Plan with identification of reviews and evaluations which will be undertaken, such as mid-term reviews or evaluations of activities
- An organizational setup and budgets for monitoring and evaluation.

3

<http://gefweb.org/MonitoringandEvaluation/MEPoliciesProcedures/MEPTools/meptstandards.html>

Minimum Requirement 2: Application of Project M&E

- Project monitoring and supervision will include implementation of the M&E plan, comprising:
- Use of SMART indicators for implementation (or provision of a reasonable explanation if not used)
- Use of SMART indicators for results (or provision of a reasonable explanation if not used)
- Fully established baseline for the project and data compiled to review progress
- Evaluations are undertaken as planned
- Operational organizational setup for M&E and budgets spent as planned.

SMART INDICATORS GEF projects and programs should monitor using relevant performance indicators. The monitoring system should be “SMART”:

1. **Specific:** The system captures the essence of the desired result by clearly and directly relating to achieving an objective, and only that objective.
2. **Measurable:** The monitoring system and its indicators are unambiguously specified so that all parties agree on what the system covers and there are practical ways to measure the indicators and results.
3. **Achievable and Attributable:** The system identifies what changes are anticipated as a result of the intervention and whether the result(s) are realistic. Attribution requires that changes in the targeted developmental issue can be linked to the intervention.
4. **Relevant and Realistic:** The system establishes levels of performance that are likely to be achieved in a practical manner, and that reflect the expectations of stakeholders.
5. **Time-bound, Timely, Trackable, and Targeted:** The system allows progress to be tracked in a cost-effective manner at desired frequency for a set period, with clear identification of the particular stakeholder group to be impacted by the project or program.

Annex 5 List of intended additional recipients for the Terminal Evaluation (to be completed by the IA Task Manager)

Name	Affiliation	Email
Aaron Zazueta	GEF Evaluation Office	azazueta@thegef.org
Government Officials		
Lina Yamout	Ministry of Environment	L.Yamout@moe.gov.lb
GEF Focal Point(s)		
Berj Hatjian	Ministry of Environment	dgmo@moe.gov.lb
Nancy Khoury	Ministry of Environment	n.khoury@moe.gov.lb
Executing Agency		
Dr. Nasri Kawar	American University Beirut	nskawar@aub.edu.lb
Dr. Nabil Nemer	American University Beirut	nabil.nemer@gmail.com
Implementing Agency		
Carmen Tavera	UNEP DGEF	carmen.tavera@unep.org
Kristin Mclaughlin	UNEP DGEF	km@rona.unep.org
Sandeep Bhambra	UNEP DGEF	sandeep.bhambra@unep.org
Virginie Hart	UNEP DGEF	virginie.hart@unep.org

ANNEX 2: PROJECT LOG FRAME

Output (as listed in the approved project document)	Description of work undertaken during 1 January – 30 November 2007	Overall status of the Activity and use of the Output (dissemination and uptake)	Description of problems encountered; and Outstanding issues and actions
<p>Overall Objective. Development of an action plan for integrated management of forests including assessment of insect infestation in cedar forests in the Mediterranean region with particular emphasis on the Tannourine-Hadath El-Jebbeh cedar forest.</p>	<p>1. Sustainable Management Plan for the Tannourine Forest is completed and under implementation.</p> <p>2. More comprehensive information available on the state of health of cedar forest.</p> <p>3. A full range of options to manage priority forest insect pest problems at the local and regional levels has been explored.</p>	<p>100% completed. 1. The Sustainable Management Plan for the Tannourine Cedar Forest Nature Reserve has been completed and approved by the Project team and MoE. The Management Plan is the official document used by the Tannourine Cedar Forest Nature Reserve Committee to implement and finance the activities. The plan was prepared based on several consultation meetings with local stakeholders and communities. The activities that need extra financing are being prepared in a form of proposals and distributed to national and international granting agencies, institutions, embassies (Spanish embassy, Japan embassy, Walid Ben Talal Foundation, local donors) The rural community, as well as neighboring villages, is directly informed about the Management Plan by their representatives in the committee.</p> <p>2. Insect surveys in cedar forests in Lebanon have shown that <i>Cephalcia</i> is found only in the Tannourine and Bcharreh forests and has not spread to other regions. Insect surveys carried out in cedar forests in Algeria, Cyprus, Morocco and Turkey</p>	<p>No problems have been encountered.</p> <p>The next step is to continue implementing the management plan. This is the responsibility of the Tannourine Cedar Forest Nature Reserve (TCFNR) committee in cooperation with the MOE. The Tannourine community should be involved to make them feel that the Reserve is part of their community. The new grant from the Fonds Francais Pour L'Environnement Mondial (FFEM) (French Fund for Global Environment) will definitely help in this respect. Financing agreement between FFEM and MoE entitled :”Support to the Nature Reserves of Lebanon is still under discussion”. The Tannourine Cedar Forest Nature Reserve is one of the sites that will benefit from this grant. The main activities financed by the grant:</p> <p>1. Logistic support to the managerial administration of the Reserve.</p>

		<p>showed that <i>Cephalcia</i> is not present in any of these countries.</p> <p>3. Results of various studies to explore alternatives to pesticide applications against <i>Cephalcia</i> infestations have resulted in identifying a number of options. The composition of <i>Cephalcia</i> pheromones has been identified and extracts have been successfully tested in the forest. Consequently, an important tool for detecting and managing any <i>Cephalcia</i> infestation is now available. Color sticky traps have also been successfully tested in the forest for their efficacy in attracting <i>Cephalcia</i> adults, and thus another option is available. Laboratory tests on the use of the entomofungus, <i>Beauveria</i>, as a means of controlling <i>Cephalcia</i> larvae have been promising. The next step will be to test the efficacy of <i>Beauveria</i> in field tests.</p>	<ol style="list-style-type: none"> 2. Protection and management of biodiversity of the Reserve 3. Support to visitor facilities and awareness 4. Socio economic activities and rural development
<p>Outcome 1. Development of an action plan for integrated sustainable management of cedar forests in the region using the Tannourine forest as a case example and addressing various threats to the forest ecosystem.</p>	<p>Sustainable Management Plan for the Tannourine Forest is completed and under implementation.</p>	<p>100% completed. The Sustainable Management Plan for the Tannourine Cedar Forest Reserve was presented and discussed in a workshop held in Tannourine on May 12, 2007. About 40 persons representing the various stakeholders attended the workshop. TCFNR revised budget proposals to include the activities stipulated by the Management Plan and resubmitted it to the Ministry of Environment.</p>	<p>See comments above.</p>
<p>Outcome 2. Increased institutional and</p>	<p>This outcome was accomplished by carrying out</p>	<p>100% completed. The four students have completed their studies and the planned</p>	<p>No problems have been encountered.</p>

<p>community knowledge exchange, education and capacity building for the management of cedar forests.</p>	<p>two distinct types of activities:</p> <ol style="list-style-type: none"> 1. Formal education on a graduate level of four students. 2. Capacity building of various groups through workshops and training courses. These are detailed in the accompanying table “Meetings”. 	<p>workshops and training have been conducted.</p> <p>Two students have already been employed by the private sector. The first is responsible for the management of insect problems in both landscape ecosystems and indoor plants in a local company. The second student was also employed by a nursery and ornamental company to manage insect problems of trees including cedars.</p> <p>We consider this a success since the two students were directly recruited for their knowledge in insect problems of trees. Naturally, it would have been preferable to have the two students employed by either the Ministry of Environment or the Ministry of Agriculture, but this is not possible at present due to the current situation in the country and the freeze on hiring in the public sector.</p> <p>The third student is already employed by the Ministry of Environment and has probably more chances to apply on a national level the accomplishments she achieved by being supported by the project</p> <p>The fourth student is in the last stages of her research and she will finish soon.</p>	
<p>OUTPUT 1. Development of an action plan for integrated sustainable management of cedar forests in the region using</p>			

<p>the Tannourine forest as a case example and addressing various threats to the forest ecosystem.</p>			
<p>Activity 1: Developing a sustainable management plan for the Tannourine Reserve to achieve a high level of protection, conservation, rehabilitation and management of biodiversity, habitats and natural processes to complement the ongoing work on controlling the insect pest.</p>	<p>Sustainable Management Plan for the Tannourine Forest is completed and under implementation.</p>	<p>100% completed. The Sustainable Management Plan for the Tannourine Cedar Forest Nature Reserve has been completed and approved by the Project team and MoE. The Plan was presented and discussed in a workshop held in Tannourine on May 12, 2007. About 40 persons representing the various stakeholders attended the workshop. TCFNR revised budget proposals to include the activities stipulated by the Management plan and resubmitted it to the Ministry of Environment. MOE Finance : The TCFNR has received six months ago the budget allocated by MOE (about \$ 66,666) which will cover personnel salaries as well as running office expenses and certain biodiversity activities. FFEM project will finance basically the biodiversity related studies in addition to ecotourism activities and other socio economic activities. We are concerned that MOE was not able to present budget proposals to the government for the last two years due to the political situation in the country, and the resignation of both the Minister of Environment and the interim Minister, but hopefully, this will be covered by other projects and FFEM.</p>	<p>See comments above.</p>

<p>Activity 2: Carry out activities and researches to investigate the effect of specific threats such as forest fire, overgrazing, urbanization, mines, and changes in land use on the health of forests.</p>	<p>N/A</p>	<p>N/A</p>	<p>It has been determined that Investigating the effect of specific threats such as forest fire and overgrazing is not needed since fires in cedar forests do not occur and goat grazing in cedar forests has been banned. Resources were reprogrammed</p>
<p>OUTPUT 2. Study of the various factors that caused the <i>Cephalcia</i> outbreak in Lebanon. Lessons learned shared among countries participating in the project</p>	<p>The various factors that that caused the <i>Cephalcia</i> outbreak in Lebanon have been identified. This information has been shared with the scientists participated in the project in Algeria, Cyprus, Morocco and Turkey.</p>	<p>100% completed. Recent studies conducted by the team correlating the effect of soil temperature and humidity on the life cycle of <i>Cephalcia</i> indicated that there is a direct correlation between them. This is a significant finding on the possible causes of the outbreak of <i>Cephalcia</i> in Tannourine and not in other forests. This finding has been reconfirmed by further data collection.</p>	<p>No problems have been encountered.</p>
<p>Activity 1: Study of the possible causes of <i>Cephalcia</i> outbreak with special emphasis on weather and environmental factors.</p>	<p>The various factors that that caused the <i>Cephalcia</i> outbreak in Lebanon have been identified.</p>	<p>100% completed. Collection of weather data has been ongoing for a long time. There are three weather stations at present, one in the Tannourine reserve, one in the Shouf cedar reserve and one in Bcharreh cedar forest. Weather data from the three stations is available.</p>	<p>No problems have been encountered.</p>
<p>Activity 2: Establishment of a GIS database of the Tannourine Cedar Forest Nature Reserve for use in regular monitoring of all changes occurring in the reserve</p>	<p>The major components of the GIS database of the TCFNR are the topography, soil profiles, various maps, trails, flora and age of trees and all relevant information has been collected.</p>	<p>100% completed. The description of soil profiles and analysis of soil samples in TCFNR was completed in 2006. A total of 26 profiles in the reserve were described and soil analyses were completed. A soil map of the Reserve was also produced. The information was entered on the GIS</p>	<p>The GIS map will form a basis for use in regular monitoring of all changes occurring in the reserve. Thus, it is very important to follow up on this activity which is the responsibility of the TCFNR committee to see to it that this is</p>

		<p>database of the TCFNR. Dr. Issam Bashour, Professor of Soils at AUB is in charge of this activity.</p> <p>The GIS database and various maps of the TCFNR have been prepared. Dr. Nadim Farajalla, Assistant Professor of Hydrology at AUB and specialist in GIS is in charge of this activity. Study of the flora of the TCFNR was carried out by Dr. Elsa Sattout and the information was entered on the GIS database.</p> <p>The GIS database will also be downloaded on the computer in the office of the TCFNR and will be used directly by the management team and the specialist to add and use data. The GIS will serve as a monitoring tool to measure biodiversity changes in future years.</p>	done by contracting specialists in this field.
OUTPUT 3. Level of risk from <i>Cephalcia</i> attack is assessed for cedar forests in the Mediterranean region.			
Activity 1: Coordinate activities between Lebanon and the other counties involved in the project on assessment of risk from <i>Cephalcia</i> attack of cedar forests.	Coordination with the scientists participating in the project in Algeria, Cyprus, Morocco and Turkey has been ongoing since the start and was specially enhanced through the coordination meetings in Lebanon and the workshops conducted in the four countries.	80% completed. Only non-participation of Syria prevented the 100% completion of this component.	Syria has not participated as planned which is unfortunate. It would have been to their advantage to benefit from the funds available to them.

<p>Activity 2: A thorough survey of all cedar forests in the Mediterranean region for <i>Cephalcia</i> and its natural enemies and implement actions in forests already under the threat from the pest.</p>	<p>Insect surveys have been carried out.</p>	<p>100% completed. The status of cedar forests in Lebanon is known by now subsequent to surveys carried out in 2005, 2006 and 2007. Surveys have also been completed in the four participating countries, namely Algeria, Morocco, Cyprus and Turkey and the reports were submitted and have been approved.</p>	<p>It is very important that monitoring of cedar forests in the region for <i>Cephalcia</i> be continued.</p>
<p>OUTPUT 4. Promoting the use of new monitoring tools in detecting insect outbreak and developing and utilizing alternative methods for the control of <i>Cephalcia</i> to replace compounds that are not environmentally friendly.</p>		<p>100% completed. Application of the tool-kit on invasive alien species was included in all of the regional workshops that were held in 2005 and 2006.</p> <p>The use of pheromone in detecting <i>Cephalcia</i> is the major achievement which will reduce the cost of labor intensive traditional methods. However, an additional two years of field testing are necessary before marketing the new pheromone which is the first for a <i>Cephalcia</i> species in the world.</p> <p>The use of biological control through a <i>Beauveria</i> species discovered has been largely investigated and tested on two forest insects with very successful results under laboratory conditions. Two scientific papers in international journals have been published. This will definitely help to include <i>Beauveria</i> as a biological control agent for forest insects in many countries and as a possible treatment for <i>C. tannourinensis</i> in Lebanon, if outbreak situation will occur again.</p>	
<p>Activity 1: Extracting the</p>	<p>The composition of</p>	<p>100% completed.</p>	<p>Cost of production in quantities</p>

<p><i>Cephalcia</i> pheromone and determining its chemical composition and exploring the possibility of synthesizing it for possible use in monitoring and controlling the insect.</p>	<p><i>Cephalcia</i> pheromones has been elucidated using gas chromatography/mass spectroscopy. Synthesis of the pheromones was also feasible. These were tested in the Tannourine forest in May 2007.</p>	<p>The work on <i>Cephalcia</i> pheromones in cooperation with INRA has been successful. The composition of the pheromone blend has been identified and is composed of three products. Testing of these products was conducted during May 2007 giving good results. A supply of these products will be available for field testing for monitoring purposes.</p>	<p>may be prohibitive.</p>
<p>Activity 2: Developing alternative methods of insect pest control including the search for natural enemies of <i>Cephalcia</i> and the possible implementation of an IPM program.</p>	<p>Most of the work in developing alternative methods of <i>Cephalcia</i> control has been on the use of <i>Beauveria</i> species.</p>	<p>100% completed. Testing the efficacy of the fungus <i>Beauveria</i> as an alternative method of controlling <i>Cephalcia</i> larvae in laboratory tests showed promising results. It was also tested against other forest insect pests with equally good results. Molecular techniques were used in identifying the <i>Beauveria</i> species. Further studies on testing <i>Beauveria</i> species against other cedar forest insects are in progress.</p>	<p>Natural enemies may not be very efficient in controlling <i>Cephalcia</i> population. An IPM program could be more feasible.</p>
<p>OUTPUT 5: Increased institutional and community knowledge exchange, education and capacity building for the management of cedar forests.</p>		<p>Forests in Lebanon have always been neglected both at the national and academic levels; there was no specific program in the universities dealing with forest problems on one hand, and the lack of a strategic plan for forests by the government before the <i>Cephalcia</i> problem.</p> <p>The increased number of representatives from different institutions in all of project meetings and workshops would enhance their knowledge of management of cedar forests</p> <p>The number of projects related to</p>	

		<p>forests has increased: GEF approved Lebanon's request for a MSP entitled: Safeguarding and Rehabilitating Woodland Resources</p> <p>Another Project was proposed to be funded under GEF-4 RAF on: "Mainstreaming Biodiversity Management into Medicinal and Aromatic Plants Production Processes" and was granted PIF approval with an allocated amount of US\$ 0.980 million.</p> <p>No awareness surveys were conducted at the local community level before the initiation of the project. The awareness activities conducted within the scope of the project and the positive feedback by the trainees have encouraged the local schools of Tannourine to include biodiversity lectures in their curriculum and asked members of TCFNR committee and its management team to deliver the lectures.</p>	
<p>Activity 1: Carry out activities to build a team of professionals specialized in forest entomology, ecology, biodiversity and related fields by granting fellowships for Masters degrees in these specializations.</p>	<p>The project budget supported for graduate students. Three studied at the American University of Beirut while the fourth studied at the St. Joseph University.</p>	<p>100% completed. One student, Mr. Charbel Lahoud, graduated in October 2006. His thesis title was: "Physiological Development of <i>Cephalcia tannourinensis</i> larvae as influenced by soil properties of cedar forests in Lebanon".</p> <p>The second student, Ms. Jane Bal, graduated in October 2007. Her thesis</p>	<p>The capacity building of the individuals working in this project are unique because it has reassembled the academic, the government and the local community which are all essential to work on a problem.</p>

		<p>entitled was: “Identifying and testing the efficacy of pheromones of the cedar shoot moth, <i>Dichelia cedricola</i>”.</p> <p>The third graduate student, Ms. Sarah Ezzeddine, started studies in Forest Entomology in October 2006 and has completed most of the research. Her thesis title is “Molecular characterization of the cedar processionary moth, <i>Thaumetopoea libanotica</i> and the identification of its sex pheromone.” She will complete the requirements for graduation in July 2008.</p> <p>The fourth graduate student, Ms. Lara Samaha, also started studies in October 2006 at the St. Joseph University and is majoring in Environmental Biology. Her thesis title is "Linking Biodiversity to Business: Community-Based Small Enterprises Related to Biodiversity.” She completed almost all requirements for graduation in September 2007, except for one course which she will take the second semester and will graduate in June 2008.</p>	
<p>Activity 2: Carry out activities to train various target groups on invasive species control, forest management, flora and fauna monitoring and the use of GIS and GPS in this field and resource mobilization.</p>	<p>These are detailed in the next column.</p>	<p>100% completed.</p> <ol style="list-style-type: none"> 1. Workshop on the discussion of the draft proposal of the management plan was held in Tannourine in May 2007. 2. Workshop on the Results of the first year baseline birds study at the Tannourine Cedar Forest Nature Reserve was held in Tannourine in May 2007. 3. Workshop on the Results of the first year baseline mammals study at the 	<p>Training of the local community and specially the one on training of several Tannourine women on Principles and Techniques of Food Processing will assist them in preparing traditional processed foods for sale to visitors of the reserve. This will make the local community feel that they are part of the reserve activities. The TCFNR</p>

		<p>Tannourine Cedar Forest Nature Reserve was held in Tannourine in May 2007.</p> <p>4. Training workshop on “Developing Local Capacity in Botanical Assessment, Flora Monitoring and Management” was held in Tannourine in July 2007.</p> <p>5. Training workshop on “Developing local Capacity in Monitoring Major Insects Pests of Cedars” was held in Tannourine in August 2007</p> <p>6. Training on first aid principles was held in Tannourine in September 2007.</p> <p>7. Training of several Tannourine women on Principles and Techniques of Food Processing was held in Tannourine in September-October 2007.</p> <p>A total of 108 local individuals from Tannourine and the neighboring villages have been trained on the various biodiversity problems and Reserve management in the seven workshops listed above. The results of each workshop were evaluated by the trainees at the end of the training. All had very favorable responses and requested that additional workshops be organized in the future.</p>	<p>committee has heard complaints from the Tannourine municipality that they are not “benefiting” from the reserve.</p>
<p>Activity 3: Carry out public awareness initiatives about the importance of forests and biodiversity by preparing information material.</p>	<p>Preparation of the DVD documentary and the various publications was completed in Dec. 2007.</p>	<p>100% completed. Documentary: A DVD documentary on the Project and the TCFNR entitled “Saving a Cedar Forest” was completed in October 2007. Publications: details of the various publications are given in the table below. A total of 24,000 copies have been</p>	<p>No problems have been encountered.</p> <p>The various publications will be very helpful in promoting the TCFNR.</p>

		<p>prepared for wide distribution to various interested persons, schools and visitors of the Reserve.</p> <p><u>I. Ministry of Environment</u></p> <p>Upon the request of MoE, the documentary was played on all local T.V. channels targeting public at large, in addition the documentary was played during the Nature Reserves retreat organized by the MoE on the occasion of the National days of Nature Reserves in March 2008. On the other hand copies were handed to following individuals/bodies:</p> <ol style="list-style-type: none"> 1. Ambassador of Norway 2. Ambassador of Switzerland 3. CEO of HOLCIM (Cement industries) 4. CEO of Navy Group (Oil Spill Management company) 5. Office of the Prime Minister 6. The Prime Minister (H.E. Fuad Siniora) 7. The President of the Republic (H.E. Emile Lahoud) 8. Minister of Finance 9. GEF-CEO Mrs. Monique Barbut 10. Chief of Central Inspection 11. Head of Finance Dept. in Central Inspection 12. Head of Administrative Dept. in Central Inspection 13. Nature Reserves committees 	
--	--	---	--

		<p>14. Independent consultants, NGOs, some school teachers Planned distribution list includes: also</p> <ol style="list-style-type: none"> 1. All Country Partners 2. Discovery Channel 3. National Geographic Channel <p><u>II. The Tannourine Cedar Forest Nature Reserve Committee</u></p> <p>The TCFNR Committee recently invited representatives from the media, government departments and academic institutions in addition to the local community of Tannourine village for the DVD viewing and discussion at the Notre Dame University Issam Faress Hall in Zouk Mosbeh near Beirut. More than 140 guests attended the presentation. The committee plans also to hold another viewing at the Balamand University in the North of Lebanon.</p> <p><u>III. American University of Beirut</u></p> <ol style="list-style-type: none"> 1. Dr. Nasri S. Kawar, Project Director, was invited by the President of AUB to present the DVD and talk about the project at the semi-annual meeting of AUB's Board of Trustees which was held in New York in March 2008. About 75 persons were present including trustees and AUB officials. 	
--	--	---	--

		<p>2. AUB President John Waterbury sent a letter about the project to the Lebanese Prime Minister, Fuad Siniora, who responded and congratulated the team of experts at AUB for their achievement in executing the project. Copies of the letters were sent to Ms. Kristin McLaughlin and Ms. Sandeep Bhambra.</p> <p>3. AUB recently established a branded YouTube site: http://www.youtube.com/AUBatLebanon The DVD was uploaded on this site: (http://www.youtube.com/watch?v=ULZMApm5syo). The DVD already had 384 viewings since it was uploaded on April 29, 2008.</p> <p>4. Copies of the DVD and the publications have been sent to AUB President, Vice Presidents, Academic Deans and faculty members in the Faculty of Agricultural and Food Sciences.</p> <p>5. Articles about the project have been published in the following AUB publications and websites:</p> <p>a).http://www.aub.edu.lb/news/archive/preview.php?id=78960.</p> <p>b).http://www.lb.aub.edu.lb/~webbuln</p>	
--	--	--	--

		<p>/v9n5/</p> <p>6. Posted information about the project on the following site:</p> <p>http://www.al-hakawati.net/english/Environment/env70.asp</p> <p>A new website for the TCFNR has been established. It is www.arztannourine.org.</p> <p>E-mail address: info@arztannourine.org</p>	
--	--	---	--

ANNEX 3: LIST OF INTERVIEWEES AND FEEDBACKS RECEIVED

INTERVIEWEES

Interviews/meetings with project management and technical support including:

- Lina Yamout, MOE
- Nasri Kawar, Nabil Nemer, AUB
- Charbel Lahoud, Jane Bal, Sarah Ezzedine, Lara Samaha (graduate students funded by project , AUB and MOE)
- Members of the local and the project Tannourine Steering Committee
- Dr. Berge Hatjian, Director General of the MOA
- Dr. Waterburry, President of the American University of Beirut

Telephone interviews and emails with the focal points from participating countries from the region (Algeria, Cyprus, Morocco, and Turkey).

Telephone interviews with the UNEP/DGEF project task manager and Fund Management Officer.

Meetings with some of the scientists involved in the project, mainly Dr. Carla Khater (Management Plan) and Dr. Nadim Farajalla (GIS)

Meeting with Mr. Nizar Hani, manager of the Al Shouf Cedar Reserve

Telephone meetings with representatives from cedar forests committees in Lebanon

EMAILS RECEIVED FROM TURKEY, ALGERIA AND MOROCCO

Turkey

Dear ASMAR

Sorry for the delay in answering.

Especially, considering the threat on the sustainability of cedar forest in Lebanon and Syria, I believe that the project has a great importance for protection of cedar forests in Mediterranean basin in future.

The project has provided a general view of the pests of cedar and moreover we have chance to get detailed information about important insects in Turkey.

Sampling areas have been chosen from the sites which have entomological problems.

Yellow sticky traps have been used for the first time in this cedar forest. Therefore we could have determined that *Cephalcia tannoriensis* has no distribution in our country.

In my opinion, the project has contributed to our knowledge on pest of cedar.

At the end of the project if there has been a workshop with the members it could be beneficial for discussion of results.

It was a great pleasure for me to be involved in such a project.

Thanks and best regards.

Doç. Dr. Mustafa AVCI
Süleyman Demirel Üniversitesi
Orman Fakültesi Orman Entomolojisi ve Koruma AD
ISPARTA
Tel: 0 246 2370105
Faks: 0 246 2371810
GSM: 0 505 8123050 - 0 533 6228249
avci@orman.sdu.edu.tr

Algeria

Commentaires sur le projet intitulé

“Integrated Management of Cedar Forests in Lebanon in Cooperation with other Mediterranean Countries”

financé par le **GEF/UNEP** et coordonné par l’AUB

Pour l’Institut National de Recherche Forestière, la participation à ce projet a été très enrichissante sur le plan scientifique et également au niveau des relations établies avec l’ensemble des collègues partenaires dans ce projet.

Le projet a permis d’homogénéiser les méthodes d’inventaire des ravageurs notamment phytophages du cèdre y compris l’étude du cortège d’ennemis naturels, cet inventaire étant indicatif de la biodiversité.

Les méthodes de détection de *Cephalcia tannourinensis* Chevin dans deux forêts de cèdres représentatives n’ont pas permis de retrouver cet insecte après trois années de surveillance des peuplements (2005, 2006, 2007).

En Algérie les cédraies les plus méridionales des Aurès sont soumises à des fortes attaques de la processionnaire d’été: *Thaumetopoea bonjeani*, dans ce cadre nos partenaires dans le projet on été informés sur la gravité de ces attaques et des dispositifs de recherche mis en place.

Les deux ateliers qui se sont déroulés à Beyrouth nous ont permis de mieux connaître les problèmes phytosanitaires et écologiques des cédraies méditerranéennes. Les échanges de point de vue entre chercheurs et praticiens ont été extrêmement bénéfiques. Le principal résultat atteint est une meilleure connaissance de l’état des cédraies et de toutes les méthodes à mettre en place pour une surveillance des insectes ravageurs, et de manière plus générale les méthodes les plus adéquates pour une surveillance continue des écosystèmes cédraies. Par ailleurs, l’atelier cèdre qui s’est déroulé à Alger a permis aussi aux chercheurs et forestiers algériens d’approfondir leur savoir faire et leurs connaissances sur l’écologie du cèdre.

Au total, L’INRF en tant que partenaire du projet est très satisfait des résultats obtenus et de l’accueil très chaleureux de nos collègues de l’AUB. Il est souhaitables que les relations établies se poursuivent en vue de continuer les échanges d’expériences et de se concerter sur tout ce qui concerne la santé des forêts méditerranéennes.

Alger le 10 Juillet 2008

Mohamed KHEMICI

Maître de recherche

Institut National de Recherche Forestière

Morocco

Projet "Integrated Management of Cedar Forests in Lebanon in Cooperation with other Mediterranean Countries"

----- Principaux résultats de la partie marocaine -----

Depuis que j'ai commencé à travailler sur les insectes du cèdre en 1979, et ma participation aux différentes rencontres dans le domaine, j'ai été convaincu que les problèmes liés aux insectes sont similaires dans tous les pays méditerranéens. La collaboration entre les chercheurs travaillant sur le sujet était donc essentielle pour faire face aux nombreux problèmes posés par les insectes dans ces pays. La collaboration officieuse a été possible avec certains collègues dans le Nord de l'Afrique notamment, mais la collaboration officielle, à l'échelle de tous les pays où se trouve le cèdre, n'a vu le jour que dans le cadre du projet "Integrated Management of Cedar Forests in Lebanon in Cooperation with other Mediterranean Countries". En effet avant le démarrage dudit projet, nous avons eu l'occasion avec l'actif des Docteurs Kawar et Nemer, de l'Université Américaine de Beyrouth, d'exposer et de discuter les problèmes relatifs au cèdre dans les six pays du pourtour méditerranéen à savoir le Liban, la Syrie, la Turquie, la Grèce, l'Algérie et le Maroc. L'occasion était donc, pour moi, l'exhaussement d'un rêve et une opportunité pour en fin travailler ensemble et échanger nos idées et résultats. Le travail en groupe est plus que jamais une nécessité quand on sait que le changement climatique est global et son impact sur la forêt en général et sur la cédraie en particulier est tangible. Ainsi des dépérissements de cet arbre sont notés un peut partout dans les pays méditerranéens.

Pour ce qui est du volet scientifique de cette collaboration, mon échantillonnage dans des placettes différentes et caractéristiques de la cédraie marocaine du Moyen Atlas m'a permis l'obtention des résultats suivants :

- Confirmation de l'absence de *Cephalcia tannourinensis* par des piégeages et observations directes sur les arbres.
- Connaissance des caractéristiques du phytophage *Scythropus warioni* Mars. (Col. Curculionidae) en tant que ravageur potentiel.
- Etablissement d'une relation entre le xylophage Bupreste *Phaenops (Melanophila) marmottani* et le dépérissement du cèdre.

La gradation soudaine du xylophage *Phaenops (Melanophila) marmottani* dans les cédraies marocaines permet de tirer la sonnette d'alarme pour une vigilance accrue et une surveillance continue des insectes dont l'impact sur l'arbre est considéré comme insignifiant. Les échanges d'informations entre l'équipe du projet devraient rester permanents pour faire face à toute menace contre la cédraie. Une collaboration à long terme est aussi vivement souhaitable pour atteindre nos objectifs communs de préservation de la cédraie dans les pays du pourtour méditerranéen. Des échantillonnages étendus à tous les massifs du cèdre au Maroc (Rif, Moyen Atlas et Haut Atlas) apporteraient des informations supplémentaires et complètes sur les différents ravageurs du cèdre mais nécessiteraient des moyens plus importants que ceux octroyés au projet «Integrated Management of Cedar Forests in Lebanon in Cooperation with other Mediterranean Countries».



Mohamed MOUNA
Professeur à l'Institut Scientifique
Coordonnateur de la partie marocaine du projet

EMAILS RECEIVED FROM THE STUDENTS

Mr. Charbel Lahoud

Dearest Fadi, first of all I have appreciated our phone conversation and as reference to our phone conversation I will brief you about my past future and present with Environmental project and GEF in Lebanon.

First of all, I Charbel Lahoud got the scholarship in 2004 and I was honoured to work and study with the GEF project concerning mainly the cedars of Lebanon (*Cedrus libani*) and other countries. I was a honour list student majoring in Agriculture Engineering at AUB and did my masters degree in Plant protection, mainly entomology (study of insects) in affiliation with the UN-GEF project, where I found myself dedicated for the environmental work in Lebanon especially in the ecosystem and forestry majors.

I have learned a lot and gave a lot for my community through this project, but unfortunately there was no follow up from the government side, (where I have applied to work after I was done with my thesis and masters degree at AUB), and the answer was negative and I kept on applying to Ministries to help my country and transfer all my technical information that I have learned at GEF and INRA, but always negative (connections play in Lebanon). After being fed-up with the government, I moved into the private sector and now I am working as technical manger at Contra (AMC group) dealing with chemicals, agrochemicals, pest control and food safety, but still and always having some soft activities with NGOs like Green Line, scouts, CISV etc. because this is where I belong but not where I can stand to earn my living, so I was kind of obliged to work for the private sector knowing that I still have a lot to give and teach to my community and country Lebanon, but doors seems hard to open. Well the problem is lack of continuity and follow ups in this country and also the problem is that we do not have any position for forest engineers or ecosystem researcher and scientists in this country (my dream work some day that I will achieve by opening my own NGO that deals with forestry and mostly researches in Lebanon).

Finally I will be brief as I said, please Fady do not hesitate to email me if you need any help, always keeping in mind that I have received a lot from GEF and still and always willing to transfer my knowledge to help my country, hopefully things will change soon.

Regards

Ms. Lara Samaha

I have benefitted from a scholarship from UNEP/GEF through the project "Integrated Management of Cedar Forest in Lebanon in cooperation with other Mediterranean countries" executed by AUB and the Ministry of Environment to carry on Masters in "Biology and Marketing" at the Saint-Joseph University "USJ".

The thesis tackled the issue of community-based small enterprise related to biodiversity: Income Generation and Impact on Conservation and Sustainable Use. It highlighted the effect of biodiversity-related community-based small enterprise with proper link to the market on increasing rural household income and its role in achieving desirable outcomes for conservation and sustainable use of biodiversity. In addition, it exposed the current situation in Lebanon in regards to marketing of biodiversity-related products focusing on medicinal and aromatic wild plants.

The graduate studies were beneficial at personal level and also at institutional level since the Department of Conservation of Natural wealth that I am heading at the Ministry of Environment deals mainly with Biodiversity. The Masters will help in particular to focus more the work in this field on the economic benefits derived from biodiversity and the linkage between biodiversity and business, specially that the work on biodiversity was mainly focused on conservation while there is a need to promote the sustainable use of biodiversity and to integrate it more in the Ministry's future plans and projects.

National initiatives on biodiversity were mainly related to protected areas while biodiversity conservation can be achieved through direct economic benefits to the rural communities resulting in sustainable use. The investment in business linked to biological resources and related products and services can generate income and job opportunities for local families living in and around natural areas leading to a positive incentive for locals to conserve and sustainably use these wild resources.

The expertise and skills gained through the Masters will be useful to my work as it will facilitate to better mainstream the sustainable use of biodiversity in national policy development and decision-making thus enhancing its socio-economic value of and increasing the awareness about its importance and the need for its preservation through wise use.

Ms. Sarah Ezzedine

Thesis subject:

Thaumetopoea libanotica or the cedar processionary moth:

Thaumetopoea libanotica Kiriakoff and Talhouk (Lepidoptera: Thaumetopoeidae) or the cedar processionary moth is an important insect pest of the Lebanese cedars, *Cedrus libani* Rich. This major defoliator was first studied and described in 1975 by Kiriakoff and Talhouk. It was detected at the cedar reserve of Bcharreh in the North of Lebanon. This moth species is present in the following locations: the cedar reserves of Tannourine - Hadath El Jebbeh, Bcharreh and Hehden, but no outbreaks were ever reported. *Thaumetopoea libanotica* is considered to be a “winter processionary moth” unlike the most serious defoliator of Lebanese forests the pine processionary moth, *Thaumetopoea wilkinsoni* which is considered to be a “summer processionary moth”.

Sexual pheromones are a form of chemical communication system used mainly by all types of moth species for mating purposes. So the identification of these female-emitted volatiles is a fundamental step for the monitoring of *Thaumetopoea libanotica* populations.

The objectives of the study are the following:

- Identification of the sexual pheromones of *Thaumetopoea libanotica* by chemical analysis of glandular extracts using GCMS.
- Molecular analysis: DNA sequencing of several *Thaumetopoea* species to know how much they are related, their interspecific relationship.

Ms. Jane Bal

Hello Mr. Asmar,
I hope my email finds you well.

Concerning my feedback about the Cedar project, I just want to say that it was a very important and fruitful project and shouldn't have ended because there is still so much to study and discover.

As part of my MS thesis that was fully sponsored by this project, I studied an insect called *Dichelia cedricola* which is also threatening the cedar forests in Mediterranean area, and with the help of Dr Kawar, Dr Nemer and Dr Frerot, who all know so much about this project, I could identify its sex pheromone. They were a library for my thesis. For two years I was researching and laboratory studying this insect and its habitat, and it was a very interesting study because not only I was concerned with 1 species but with biodiversity and environment of the Lebanese forests, I learned so much about cedar trees, about fauna and flora present in our forests and the causes of deterioration and the future goals that should be implemented in order to preserve those forests.

I also attended workshops organized by ministry of environment and Tannourine reserve committee and was really interested and full of new information.

Being part of this project has given my resume a very good evaluation in all the job applications I applied to, and I am very proud that I have contributed to the preservation of cedar forests of Lebanon.

But as my colleagues who also were part of this fund for their MS, I think that the major problem of such a project is the lack of employment for students who specialize in forestry. Since the ministry of environment is quiet concerned with such a project, it should provide the few students who know very well the forest ecosystem with careers in this field. Now everything I studied and learned and practiced in my 2 years MS went in vain because I am not dealing in any way with forest environment in my current employment and that upsets me a lot because I love what I used to do and didn't choose to do it by chance, but decided to study it to become a helping member in the preservation of the *Cedrus libani*, but you know how it is when you have to work no matter what, and anyway, there is no matching jobs for my specialization in Lebanon, except maybe when universities need researchers and projects as the one we were part of.

I hope my feedback matches your expectations, and thank you for your care.
Hopefully we'll have a similar project in the future so we can be part of it again.

Best regards
Jane BAL

Exotica - Verdun
Sales Engineer

Annex 4

UNEP/GEF

RECONCILIATION OF FINAL AUDIT REPORT (Jul 2004 to Dec 2007)

Project No. 4731
Name Integrated Management of Cedar Forests In Lebanon in Cooperation with other Mediterranean Countries.
FMO SB

Year	Expenditures recorded in IMIS	Project completion audit	Difference	Remarks
2004	16,819.43			
2005	115,656.72			
2006	140,125.79	401,346.00		
2007	129,043.77			
2008	89,243.02	89,604.00		
Total	490,888.73	490,950.00	-61.27	UNEP records for Qtr Jan-Mar07 understated by this amount. Adjustment entry to be done in 2008 accounts.

ANNEX 5: LIST OF DOCUMENTS CONSULTED

- Project document
- Project interim, progress and final reports
- Project work plan
- Project financial reports (including co-financing and final audit)
- Country reports
- INRA reports
- PIR reviews
- Graduate students
- Lebanon METT
- UNEP comments
- Management plan
- GIS soil profile
- Biodiversity report
- Regional impact
- Pheromone report
- Insect surveys
- Report on the last workshop (Aug. 2008)

ANNEX 6: EXPERTISE OF THE EVALUATOR

FADY R. ASMAR
Senior Consultant

ADRESS:

MK2 Bldg
Hazmieh-Mar Takla
Beirut- Lebanon
Phone: 961-3-259818
e.mail: fadyasmar@terra.net.lb
fadyasmar@gmail.com

SPECIALIST EXPERTISE

Sustainable rural development; arid and semi-arid forest and rangeland policy and management, including: silviculture, ecotourism, forest education, agro-silvo-pastoral systems, cultural aspects of biodiversity, protected areas, socio-economic aspects, integrated rural development, and project formulation and monitoring; dryland ecosystems; education.

Strong extra-professional experience in humanitarian and youth related organizations.

ACADEMIC BACKGROUND

B.Sc Agriculture and Diploma of Ingénieur Agricole
American University of Beirut, 1985

Post-graduate Diploma in Mediterranean Forests and Ecosystems
Mediterranean Agronomic Institute of Chania-Greece (MAICH)
Study on Park Management, Outdoor Recreation and Nature Conservation, 1988

M.Sc. in Mediterranean Forests and Ecosystems
Mediterranean Agronomic Institute of Chania-Greece (MAICH)
Thesis on the Ecology, Conservation and Genetic Variability of the Lebanese Cedar, 1989

PROFESSIONAL EXPERIENCE

Freelance Consultant Feb 2008 and on

International Consultant for the Final Evaluation of the GEF/UNEP Project in Lebanon: “Integrated Management of Cedar Forests in Lebanon in Cooperation with Other Mediterranean Countries”. June – July 2008

National Consultant with DMI (consulting and management) for the preparation of project documents for local development

projects in the Beqaa and North Lebanon (agriculture and forestry). March – July 2008

National Consultant on the evaluation of project proposals submitted in the framework of the Environment Fund for Lebanon (GTZ – CDR). April 2008

Part time Consultant

July 2004 – Jan 2008

Regional Consultant with UNDP/DDC on the evaluation (Program Review) of the DDC Program and its achievements in the region. Dec. 2007 – Jan. 2008

Regional Consultant with FAO-RNE (Cairo) providing assistance to the Regional Forestry Officer on the preparation of the Near East Forestry Commission and other regional meetings; on the preparation of concept notes related to the meetings; and on the preparation and review of some project documents. Contribution to the preparation of the voluntary guidelines on good forestry practices in arid and semi-arid zones in the Near East. Oct. 2007 – Dec. 2007

National Consultant with UNDP/DDC on the valorisation of the achievements of the Dry Lands Development Centre in the region. May 2007 – June 2007

National Consultant in Forest Management with FAO – Case Study on Multi-purpose forest management: a case study from Lebanon. Feb 2007 – June 2007

National Consultant with Gaia – Heritage for UNESCO on the requirements of the management plan of the Qadisha Valley (World Heritage Site). Feb 2007 – April 2007

Regional Consultant with FAO – RNE for the preparation of one case study on forest protection and fire control, and for the coordination of two study cases with different consultants, in the framework of the preparation of the task force inter-sessional meeting of the Near east Forestry Commission. Oct. 2006 – Dec 2006

Participation in the rapid assessment of the damages caused by the aggressions in July 2006, on the forestry sector, with the FAO mission; contribution to the preparation of the project documents. Oct 2006

National Consultant with the Mediterranean Agronomic Institute of Bari (MAI-B) on the rapid analysis of mountain policies and the implementation of a PNTD (Participatory and Negotiated

Territorial Development) approach in Lebanon, in the framework of the SARD – M. April 2006 – Sept 2006

National Consultant with MAI-B on the institutional analysis and information needs for mountain products and services in Lebanon. Development of an experimental data base on mountain products and services in Lebanon (www.cybermontagne.org). April 2006 – April 2007

Regional Consultant with FAO – RNE in Cairo for the preparation of a publication on the State of the Forests in the region. Dec. 2005

Regional Consultant with UNDP and UNEP (ROWA) in Bahrain to assist the country in the preparation of the National Action Plan to Combat Desertification. Nov. 2005 – June 2007

National Consultant with FAO – Lebanon for the preparation of a forest policy dialogue document. July 2005 – Sept 2005

Education Expert / Technical Consultant from Developing Countries (TCDC) for the revision of the curriculum of studies in the framework of the FAO: Improving the training capacity of the Arab Institute for Forestry and Range (AIFR) – Latakiah – Syria. The mission consists of 14 weeks (10 in the AIFR, and 4 at home) running until December 2005. Oct 2004 – Dec 2005

National Consultant with UNESCO Beirut and Gaia Heritage on the Biodiversity and cultural heritage values of the Qadisha Valley – Lebanon. March 2005 – July 2005

National Consultant with FAO – RNE for the preparation of the State of the Forests in Lebanon. July 2005

Regional Consultant with FAO - RNE for the review of a few country briefs on forestry and the forestry sector, in the framework of a study on the state of the forests in the Near East, Cairo – Egypt. July 2004

Head of Service - Range-Lands, Public Gardens and Protected Forests. Nov 1998 - Jan 2008

Directorate of Rural Development and Natural Resources.
Ministry of Agriculture

Directly involved in the different forestry related projects in the Ministry of Agriculture; the latest being the National Forest and Tree Resources Inventory (FAO – Ministry of Agriculture)

National Correspondent for the Global Forest Resources Assessment (FAO)

Contribution to the preparation of the Forestry Outlook Study (FAO)
Follow-up issues related to the CBD and the UNFCCC with the Ministry of Environment
Follow-up issues related to the United Nations Forum on Forestry
Follow-up issues related to the Millennium Development Goals
Follow-up issues related to the Mountains (in the framework of the activities initiated during the International Year of the Mountain)
Contribution to the process lead by the Council for Development and Reconstruction for the development of framework laws for the Mountains; the Protected Areas; and the Coastal Zones
Coordinator of FAO activities in the Ministry of Agriculture (2004 - 2005)

National Focal Point

1996 - 2004

Ministry of Agriculture
UN Convention to Combat Desertification
Development of project document for the preparation of the National Action Program and implementation of the UNCCD in Lebanon; UNDP- Ministry of Agriculture
Development of project for the NAP preparation; GTZ – Ministry of Agriculture
Follow-up of both projects and liaison with the Ministry of Agriculture
Contribution to the preparation of the National Action Program

Forest Engineer

Sept. 1997 – Nov.1998

Forestry Department- Directorate of Rural Development and Natural Resources. Ministry of Agriculture

National Consultant 1996 -1997

FAO/UNDP project LEB/90/001, on the National Action Plan for Forestry and on the preparation for the elaboration of a National Action Plan to Combat Desertification.
Preparation of the Umbrella Project for the CCD.
Preparation of a project document for the implementation of the NAP in Lebanon; UNDP-MOA

National Consultant 1994-1995

FAO/UNDP project LEB 90/001, Rehabilitation of the Ministry of Agriculture
Technical Assistant of the General Director

Lecturer

1994-to date

St. Joseph University
Institute of Tourism
Courses on the Fauna and Flora of Lebanon, on Ecotourism and Environment and on Ecotourism and Sustainable Development

Institute of Environmental Management
Courses on Ecosystems and on Management and Organization of
Rural Areas

School of Agriculture – ESIAM
Courses on Mediterranean Forests and on Ecology

Lecturer

1991-1995

School of Agriculture of the Holy Spirit University-Kaslik
Courses on Forestry and on Integrated Rural Development

Collaboration at the Research Program on the Cedar; joint
venture between the USEK and the Institut Supérieur
Agronomique de Beauvais - France (ISAB).

Lecturer

1992-1996

Institut d'Urbanisme- Académie Libanaise des Beaux Arts
Courses on Ecosystems, on Action of Man on his Milieu and on
Natural Risk Management

Free-Lancer

1992-to date

Landscaping and Flower Decoration projects (*Ad hoc* basis)

**Advertising and
Fund Raising**

1992-93

Ecological Activities: Cedars of God Forest,
Articles on ecological issues in the local magazine Bacharia

Trainer

1990

Training of trainers in the Peace Education Program, Initiation to
Ecology and Sensitisation to Nature
UNICEF

Social worker

1987

Save the Children Federation and Caritas

Landscaping

1986-1987

Exotica- Landscaping Department

Production Assistant 1985-1986

Agrovest-Indevco

PROFESSIONAL MEMBERSHIP AND EXTRA CURRICULAR ACTIVITIES

- Member of the Lebanese Order of Engineers and Architects
- President of Silva Mediterranea until November 2005
- Previous member of the Mediterranean Forests Genetic Resources chapter in the “Groupe de Recherches Forestières” (INRA-Avignon, France).
- Member of the Friends of the Cedars of God Comity- Lebanon.
- Member of the Comité International de Sauvegarde du Cèdre du Liban.
- Member of the national NGO, Association for Forest Development and Conservation (AFDC).
- Active member of the Scouts du Liban Association; attendance at the Université d’Eté of the Scouts de France (formation de formateurs), 1985; participation as a trainer in several training camps on the national level; Group leader till 1995.

PERSONAL INFORMATION

Spoken and written languages: French, English and Arabic

Computer skills: Windows, Excel, Power Point, MS Project