

**SHOUF BIOSPHERE RESERVE  
MANAGEMENT PLAN  
2012 - 2017**

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# SHOUF BIOSPHERE RESERVE MANAGEMENT PLAN

2012 - 2017

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## EXECUTIVE SUMMARY

### Background

The Shouf Biosphere reserve (SBR) is important nationally and internationally because it covers an area of 50,000 hectares which is equivalent to about 5% of the overall area of Lebanon, making it one of the largest mountain protected areas in the Middle East. It is home to over 70,000 people living around the core and buffer zone of the reserve and encompasses 24 different municipalities that stretch out over 3 Muhafazat (Districts). The SBR also boasts 620 hectares of *Cedrus libani* forest, the largest expanse of this species in Lebanon and 25% of the remaining cedar forests in the country. In modern day Lebanon, the legendary cedar is still revered and remains prominent in the minds of all Lebanese. It is featured on the national flag, national airline, government logos, Lebanese currency and innumerable commercial logos. It is the feature of books, poetry, post cards, posters and art. The cedars of Lebanon are an important part of the natural and cultural heritage of Lebanon.

Government legislation, Law No. 532 of 24 July 1996 declared “The communal lands of Niha, Jba’a, Mrousti, Khraibe, Maasser, Barouk, Bmohreh, Ain Dara, Ain Zhalta villages, in addition to the Government owned lands on the eastern side of Barouk Mountain” a Nature Reserve. The SBR is under the authority of the Lebanese Ministry of Environment (MOE), which manages it through the Appointed Protected Area Committee (APAC) that includes among its members the Al-Shouf Cedar Society (ACS), the Mayors of the larger villages, and independent environment experts. APAC liaises with the reserve’s Management Team, which deals with the Reserve’s day-to-day management and planning. In July 2005, UNESCO declared the Shouf Biosphere Reserve, an area of approximately 50,000 hectare – or 5% of the total area of Lebanon.

The Shouf Biosphere Reserve contains core zones, buffer zones, and a transition zone:

- 1- Core zone of the SBR is about 161 sq km. The main conservation objectives of the core zone are the protection and rehabilitation of the SBR’s natural and cultural values.
- 2- Buffer zone of the SBR is about 54 sq km. It surrounds the core zone(s) where only activities compatible with the conservation objectives can take place.
- 3- Transition zone (development zone) of the SBR is about 233 sq km. It includes all the villages surrounding the SBR where sustainable resource management practices are promoted.

A large number of local, national, and international stakeholders play an important role in the development of the SBR as supporters, partners, contractors, beneficiaries, and providers of technical and financial assistance. The management team of the SBR will convene a series of workshops to present a summary of the SBR Management Plan 2012-2017 to all stakeholders. Comments will be noted and incorporated in the upcoming SBR Management Plan.

Over the past ten years (2002-2012) the SBR designed and implemented a portfolio of projects for a total budget of almost US\$ 2,000,000. Most of these projects have focused on grassroots rural development, awareness raising, environmental education, and training. Because most of efforts of the SBR management team focused on developing socio-economic projects, the conservation side was largely neglected. A priority for the future is to obtain funding for activities addressing conservation/restoration of biological diversity in the SBR which is the “capital” on which development must be built, and to broaden the traditional pool of donors.

### **Staffing**

A number of staff concerns were reviewed in preparation of this management plan:

1- Financial Stability: due to the limited allocations that the MOE provides for staff salaries, the Al-Shouf Cedar Society (ASC) has to provide the balance of their salaries through income it earns from entrance fees and donations.

2- Professional Qualifications: most of the staff of the SBR are well qualified and have performed admirably under very difficult situations. However, not all the staff are sufficiently qualified to carry out their duties satisfactorily, and they would benefit from training courses.

3- Staff Numbers: At present, 13 permanent and 8 temporary staff members make up the SBR management team, all of whom are residents of the Shouf region. This number is far too small for the large area covered by the SBR. It is estimated that double that number (26 permanent and 16 temporary staff) will be required during the next few years to adequately manage the reserve, protect its valuable resources, and handle an increasing number of visitors.

### **Studies**

Three main studies were commissioned by the SBR in 2010 in preparation for the 2012-2017 Management Plan. The findings and recommendations of these studies played a major role in developing the vision and objectives of the management plan.

### **Marketing and Business Plan** [prepared by ECODIT-Liban]

There are currently 82 food products carrying the Shouf Biosphere Reserve label, which are produced in a traditional way by local community households. Production is currently being centralized in three (3) workshops provided and owned by ACS (located in Mrousti, Baadarane, and Jba'a). Products are primarily sold at two (2) reserve entrances (Barouk and Maasser el-Shouf), where Reserve guides are responsible for product sale and promotion, and hence receive 15% of the total revenues from entrance sales as incentive pay. The ACS receives 10% of total revenues and the program agent receives approximately 25%, while the cost of production –i.e., income to local community – is estimated to represent the remaining 50% of gross revenues. In 2008, revenues from entrance sales were about \$28,000; the “best sellers” were cedar & oak honey. The main recommendations of the business plan are to expand production gradually and seek new outlets while maintaining the territorial image and uniqueness of the SBR; focus the product range in order to capture niche markets, improve product quality, and maximize returns; and develop a new product range of a “permanent collection” of 28 high-profit or promising

items, an “organic” collection of three items, a collection of “new items” for product testing –no more than two items per year, and a collection of “special orders”.

The recommendations of the Marketing and Business Plan have been incorporated into Project 7(a) Products from the Land of Cedars, Project 7(b) Nursery and Botanic Garden, and Project 8 Small Grants Program

**Ecotourism Plan** [prepared by Pascal Abdallah]

The SBR should consider increasing cooperative partnerships and develop a tourism strategy that relies less on government support and more on the SBR’s partners. Building bridges with local stakeholders is essential to achieve positive changes in attitude towards the SBR. It is important to stress the need to respect the rights of local communities living near the reserve, and who in some cases, own land inside or adjacent to the SBR. This strategy is a down – top management model involving local communities in the planning, decision making and implementation process - in particular as it relates to providing seasonal transhumance paths, grazing in special zones, cutting wood, and charcoal production.

The growing demand for tourism in the SBR currently challenges the capacity of the management team to meet this demand without a negative effect on the environmental and cultural values of the protected area. This deficiency in capacity must be addressed through increasing the level of skills in the management team and the private tourism sector. To achieve this there is an urgent need to develop a complete guideline or code of conduct.

While the revenues generated from tourism-oriented activities may help fund conservation, tourism itself may be a source of unacceptable social and environmental change - thus threatening the values for which the SBR was established. To minimize the threats from tourism the following recommendations were made: develop “Green packages” for all types of tourists, consider the closure of access roads inside and near the core zones, limit car parking spaces and introduce pay parking in the villages, incorporate an environmentally clean shuttle transport, introduce an entrance fee for more sensitive sites.

The recommendations of the Ecotourism Plan have been incorporated into Project 5 Capacity Building, Project 6(a) Maasser Park House, Project 6(b) Niha Park House, Project 6(c) Ammiq Park House.

**Integrated Monitoring Plan (IMP)** [prepared by Elsa Sattout in collaboration with Mounir Bou Said, Riyad Sadek, Chris Naylor, and Nabil Nemer]

The Integrated Monitoring Programme [IMP] in Al-Shouf Biosphere Reserve was formulated to pave the way for the implementation of successful adaptive management principles relying on developed tools such as a monitoring programme, plant diversity databases, spatial analysis models and vegetation maps. These tools will assist the management team in evaluating on-site status and ecological trends of the reserve. The main categories covered area; flora, birds, mammals, reptiles and amphibians, and insects.

The recommendations of the Integrated Monitoring Plan have been incorporated into Project 2 Biodiversity Conservation and Recovery Plan, Project 3 Ecosystem Services and their Economic Value, and Project 4 Forest Landscape Restoration.

**Threat Reduction Assessment (TRA)** [prepared by Diane Matar]

Monitoring progress in protected areas worldwide is considered a burden to management teams who are overwhelmed with security situations (wars, poaching, vandalism), protection of the resources from tourists, and general lack of human resources. These management teams acknowledge the importance of proper and regular monitoring in their protected area, but simply do not have the time or skills to undertake these studies, particularly when biological indicators, transect lines, and GIS are used. The TRA described in Diane Matar's work focuses on the quantitative aspects of threat reduction, thereby making it a practical and innovative addition to the practice of monitoring in protected areas.

The recommendations of the Threat Reduction Assessment have been incorporated into Project 1 Demarcation of Boundaries of the Core Zone to Avoid Conflict

**Grazing Plan** [prepared by Dr. Mounir Abi-Said]

Historically, the rangelands of the reserve were used to provide grazing for a large number of small ruminant flocks. Transhumant herds used to converge to the reserve and its foothills during spring and summer. A survey undertaken by Al-Shouf Cedar Society in 1997 identified 37 herds of sheep and goats for a total of 42,000 head grazing in the Barouk, Maaser Al Shouf, and Bmohray-Ain Zhalta forests and surrounding areas. After the establishment of the reserve the number of flocks declined drastically and is now limited to herders from adjacent villages. A strategy aimed at integrating the grazing activities of these herders into the overall management plan of the reserve will benefit the herders and help fight forest fires.

The recommendations of the Grazing Plan have been incorporated into Project 1 Demarcation of Boundaries of the Core Zone to Avoid Conflict

**Vision: A world class Biosphere Reserve where natural and cultural heritage are conserved, resources are treated as wealth, investment receives due care, and development is controlled by citizens, businesses, and the managing authority.**

**First Objective: Conservation and restoration of biological diversity, ecological integrity, and ecosystem services through high-profile, science-based research and fieldwork.**

Constraints that hinder implementation of the first objective

Constraint 1 – Poorly marked boundaries/conflict with private landowners

Constraint 2 – Limited funding for biodiversity and conservation work

Constraint 3 – Insufficient knowledge of ecological processes/ecosystem services

Constraint 4 – Forest fires that threaten ecosystem/degraded land

Projects that promote implementation of the first objective

Project 1: Demarcation of Boundaries of the Core Zone to Avoid Conflict

Project 2: Biodiversity Conservation and Recovery Plan



Project 3: Ecosystem Services and their Economic Value  
Project.4: Forest Landscape Restoration (FLR)

**Second Objective: Enhance the effectiveness of the management team by providing the facilities, capacity, tools, and resources.**

Constraints that hinder implementation of the second objective

Constraint 5 – Poorly defined governance structure, insufficient core/permanent staff, gaps in staff capacity

Constraint 6 – Lack of facilities for visitors, staff, and researchers

Projects that promote implementation of the second objective

Project 5: Capacity Building

Project 6(a): Maasser Park House

Project 6(b): Niha Park House

Project 6(c): Ammiq Park House

**Third Objective: Support rural entrepreneurs and the weakest sectors of village society by boosting sustainable business practices and facilities that are linked to tourism and agriculture**

Constraints that hinder implementation of the third objective

Constraint 7 – Increasing poverty amongst weakest individuals

Constraint 8 – Local communities not benefitting from modern marketing

Projects that promote implementation of the third objective

Project 7(a): Products from the Land of Cedars

Project 7(b): Nursery and Botanic Garden

Project 8: Small Grants Program

**Fourth Objective: Boost the image of the SBR at the national and global level and position it as a leading destination for tourism, a showcase for nature conservation, and an example of ecosystem-based adaptation to climate change in the region**

Constraints that hinder implementation of the fourth objective

Constraint 9 – Ecotourism does not focus on priority issues

Constraint 10 – Climate change may have adverse effects on the SBR and its surrounding villages

Projects that promote implementation of the fourth objective

Project.9: Land of Cedars – World Class Destination

Project 10: Ecosystem-Based Adaptation to Climate Change

## Summary of Objectives, Constraints, Projects, and Workplan

Objectives	Constraints	Projects	Timeline
<b>First Objective</b> Conservation and restoration of biological diversity, ecological integrity, and ecosystem services through high-profile, science-based research and fieldwork	<b>Constraint 1</b> Poorly marked boundaries / conflict with private owners	<b>Project 1</b> Demarcation of Boundaries of Core Zone/Avoid Conflict	2013-2016
	<b>Constraint 2</b> Limited funding for biodiversity and conservation	<b>Project 2</b> Biodiversity Conservation and Recovery Plan	2013-2015
	<b>Constraint 3</b> Insufficient knowledge of ecological processes and ecosystem services	<b>Project 3</b> Ecosystem Services and their Economic Value	2012-2013
	<b>Constraint 4</b> Forest fires that threaten the ecosystem/degraded land that is prone to desertification	<b>Project 4</b> Forest Landscape Restoration (FLR)	2012-2017
<b>Second Objective</b> Enhance effectiveness of the Management Team by providing facilities, capacity, tools, and resources	<b>Constraint 5</b> Poorly defined governance structure, insufficient core staff, and gaps in staff capacity	<b>Project 5</b> Capacity Building	2013-2015
	<b>Constraint 6</b> Lack of facilities for visitors, staff, and researchers	<b>Project 6(a)</b> Maasser Park House	2012-2013
		<b>Project 6(b)</b> Niha Park House	2013-2015
<b>Project 6(c)</b> Ammiq Park House	2015-2017		
<b>Third Objective</b> Support rural entrepreneurs and the weakest sectors of village society by boosting sustainable business practices and facilities that are linked to tourism, agriculture, and traditional products	<b>Constraint 7</b> Increasing poverty amongst weakest individuals	<b>Project 7(a)</b> Products - Land of Cedars	2013-2015
		<b>Project 7(b)</b> Nursery/Botanic Garden	2014-2017
	<b>Constraint 8</b> Local communities not benefitting from modern marketing	<b>Project 8</b> Small Grants Program	2013-2016
<b>Fourth Objective</b> Boost the image of the SBR at national/global level, place it as a leading destination for tourism and showcase for nature conservation, & example of ecosystem-based adaptation to climate change in region	<b>Constraint 9</b> Ecotourism does not focus on priority issues	<b>Project 9</b> Land of Cedars – World Class Destination	2012-2015
	<b>Constraint 10</b> No plans for adaptation / mitigation of adverse effects of climate change	<b>Project 10</b> Ecosystem-Based Adaptation to Climate Change	2013-2015

## METHODOLOGY

The Shouf Biosphere Reserve Management Plan 2012 – 2017 (SBR-MP) is a succinct document that identifies the key features and values of the Shouf Biosphere Reserve (SBR), clearly establishes the management objectives to be met, and indicates the actions to be implemented. Needless to say the SBR-MP has to be flexible enough to cater for unforeseen events which might arise during the life of the plan. The planning team responsible for preparing the Management Plan include: Faisal Abu-Izzeddin, Nizar Hani, Kamal Abu-Assi, Samer Zubiyan.

Marketing and Business Plan (Karim El-Jisr of ECODIT-Liban), Ecotourism (Pascal Abdallah), Integrated Monitoring Plan (Elsa Sattout in collaboration with Mounir Bou Said, Riyad Sadek, Chris Naylor, and Nabil Nemer), and Threat Reduction Assessment (Diane Matar) were prepared in 2009-2010 by qualified experts and institutions to provide detailed information to the SBR management team. It is well understood that the SBR-MP is the prime document from which other plans flow, and should take precedence if there is doubt or conflict.

The process of developing the SBR-MP was moderately complex considering a) the ambitious objectives of the protected area, b) the risks and threats to these objectives, and c) the issues arising from outside the protected area. To ensure that the SBR-MP is a thorough and useful document the methodology included the following basic steps:

**Step 1.** Formation of a planning team that includes the Al-Shouf Management Team, Ministry of Environment (MOE), Fonds Francais pour l'Environnement Mondial (FFEM), and the consultant. The planning team met once. A preliminary "table of contents" was later presented to and accepted by the MOE.

**Step 2.** Gathering basic background information that encompassed a review of studies and references to location and boundaries of the SBR, its physical characteristics, and socio-economic features, and the views of key stakeholders.

**Step 3.** Diagnosing the management structure of the SBR by looking at the existing management structure, stakeholders, current programs being implemented, and present infrastructure of the SBR and the services it provides.

**Step 4.** Reviewing the Marketing, Ecotourism and Monitoring Plans that were specifically prepared for the SBR by qualified experts and institutions in 2009-2010, bearing in mind that these detailed studies include the opinions and aspirations of stakeholders from all the villages surrounding the SBR.

**Step 5.** Determining the vision and objectives of the SBR-MP. In line with similar management plans, the vision was broad and encompassing. However, the four objectives were more specific and included: Conservation and restoration of biological diversity; enhancing the effectiveness of the management team; supporting rural entrepreneurs and the weakest sectors of village society; and boosting the image of the SBR at the national and global level.

**Step 6.** Assessing the constraints that hinder the implementation of the four objectives

**Step 7.** Formulating management strategies that help to overcome the constraints and include the zoning requirements as well as the activities and rules of conduct in each zone.

**Step 8.** Determining and detailing the projects that would best promote the implementation of the objectives of the SBR-MP.

**Step 9.** Preparing the required Project Workplan, Annual Project Evaluation, Five Year Review of the Management Plan, Monitoring Implementation, and Mett-Forest Management Evaluation.

**Step 10.** Discussions on the best method(s) to distribute the SBR-MP with a focus on a simple chart to explain the zoning requirements (and the activities and rules of conduct in each zone) to each of the municipalities that comprise the Shouf Biosphere Reserve

## **ACRONYMS**

APAC – Appointed Protected Area Committee

ACS – Al-Shouf Cedar Society

FFEM – Fonds Francais pour l'Environnement Mondial

SBR – Shouf Biosphere Reserve

FLR – Forest Landscape Restoration

MOE – Ministry of Environment (Lebanon)

SBR – Shouf Biosphere Reserve

SBR-MP – Shouf Biosphere Reserve Management Plan

## CHAPTER 1. BACKGROUND

### 1.1 Historic significance of the Cedars of Lebanon

The cedar forests of Lebanon enjoy the unique distinction as the oldest documented forests in history. The cedars were featured prominently in the earliest written records of the Sumerians dating from the third millennium BC. The Epic of Gilgamesh describes the cedar forests of Lebanon as being “one thousand leagues long and one thousand leagues wide”.

However, it was the Phoenicians along the coast of present-day Lebanon and from such ancient cities as Byblos, Tyre and Sidon, who became the principal dealers in the timber of the cedar. Indeed, the cedars made a special contribution to the development of the Phoenician civilization by providing the timbers with which they developed their famous sea-going merchant boats - thus becoming one of the first, if not the first, major sea-going trading nation in the world. The Phoenicians transported the cedar to Egypt, until Egypt conquered Lebanon and gained direct access to the forests, which were highly prized for building temples and boats. Later the Babylonians took a similar interest in the cedars and obtained them for use in building the fabled city of Babylon.

People around the world are familiar with the cedars of Lebanon because of numerous references in the texts of the Old Testament. The Bible records in some detail how King Solomon, King of Israel, asked King Hiram of Tyre to cut and transport vast quantities of cedar wood for building his temple and palace in Jerusalem. In the 6th Century BC, Persian control of the Phoenician ports provided the Persians with the means of assembling a navy for use against their enemies the Greeks, who were embarrassing the Persians with their mobility in the Mediterranean.

The expansion of the Roman Empire into Syria and Lebanon had a detrimental effect on the cedars until the Emperor Hadrian installed markers around the boundary of the remaining forests and declared them as Imperial Domain. Specimens of these markers have been preserved and held in museum collections. Centuries later, during the early years of the twentieth century, the Ottoman Turks deforested all of the cedar growing areas within easy transport distance of their Hijaz railway to provide fuel for their wood-burning engines. Only the highest and most remote groves escaped damage.

In modern day Lebanon, the legendary cedar is still revered and remains prominent in the minds of all Lebanese. The cedar is featured on the national flag, the national airline, Government logos, the Lebanese currency and innumerable commercial logos. It is the feature of books, poetry, post cards, posters and art. The Cedars of Lebanon are an important part of the cultural heritage of the people of Lebanon.

Lebanon has only twelve cedar forests (or groves) that remain. The Shouf Biosphere Reserve (SBR) includes four of these important cedar forests namely (from north to south) Bmohrai forest, Ain Zahalta forest, Barouk forest, and Maaser forest. These forests combined are home to about 25 % of the remaining *Cedrus libani* in Lebanon, and have the highest level of natural regeneration of this tree. This makes the SBR a critically important site for the long term conservation and natural propagation of the cedars of Lebanon.

## 1.2 Legal status

### National Standing

Government legislation, Law No. 532 of 24 July 1996 declared “The communal lands of Niha, Jbeih, Mreste, Khraibe, Maasser, Barouk, Bmohreh, Ain Dara, Ain Zhalta villages, in addition to the Government owned lands on the eastern side of Barouk Mountain” a Nature Reserve.

The Al-Shouf Cedar Nature Reserve is under the authority of the Lebanese Ministry of Environment (MOE), which manages it through the Appointed Protected Area Committee (APAC) that includes among its members the Al-Shouf Cedar Society (ACS), the Mayors of the larger villages, and independent environment experts. APAC liaises with the reserve’s Management Team, which deals with the Reserve’s day-to-day management and planning.

In addition to the Ministry of Environment, the following government agencies have roles and responsibilities that impact on the environment and the Shouf Cedar Nature Reserve:

- The Ministry of Public Works is responsible for the Kefraya-Maasser Shouf road which passes through the SBR
- The Department of Antiquities has jurisdiction over the antiquities and ancient ruins in the SBR
- The Ministry of Information and the Maasser Municipality have authority over the T.V. transmitters in the SBR
- The Barouk Water Office has authority over water rights, especially the Barouk water, in the Shouf area.

The SBR needs the cooperation of all government and non-government sectors in order to fulfill its goal of conserving the natural and cultural heritage of the region, while also enhancing the well being and income of the inhabitants of the villages surrounding the SBR. This can only be accomplished through the application of laws and regulations across and between the various jurisdictions within the SBR.

### International Standing

In July 2005, UNESCO declared the Shouf Cedar Nature Reserve a “Biosphere Reserve” called the Shouf Biosphere Reserve (SBR) with an area of approximately 50,000 hectare - or 5% of the total area of Lebanon. The SBR includes the:

- 1- Shouf Cedar Nature Reserve (established in 1996) and located in the Shouf mountains of central Lebanon,
- 2- Ammiq Wetland, east of the Shouf in the Beqaa Valley. Ammiq is a Ramsar site and one of the last remaining wetlands in the Middle East, and
- 3- Twenty four (24) villages surrounding the biosphere from the eastern and western sides of the Barouk and Niha mountains.

## **CHAPTER 2. SITE DESCRIPTION**

### **2.1 Location and boundaries (Map)**

The Shouf Biosphere Reserve (SBR) lies between longitude 35° 28' - 35° 47' East and latitude 33° 32' - 35° 48' North at an altitude ranging from 1200-1980 meters. It is located along a mountain range known as the Barouk Mountain, which is a southern extension of the Mount Lebanon Range. The range runs parallel to the Mediterranean coast. The Beirut-Damascus highway and the town of Jezzine define the north and south borders of the reserve. The western slopes of the range face the Shouf region; the eastern slopes face Mount Hermon and form the western escarpment of the Beqaa Valley. The SBR covers an area of about 500 square km. that is equivalent to about 5% of the overall area of Lebanon.

The SBR includes, and is bounded by, twenty eight villages: Niha, Jba'a, Mrousti, El Khraibe, Maasser el Chouf, Batloun, Barouk, Jisr El Misri, Ain Zhalta and Bmohray, Ain Dara, El Mdairej, Dahr El Baidar, Ouadi El Delem, Qab Elias, Haouch Qaissar, Haouch El Dibs, El Safra, Ammiq, Aana, Kefraya, Kherbit Kanafar, Ain Zebde, Saghbine, Deir Ain El Jaouze, Bab Mareaa, Aitanit and Machghara. It also includes two protected areas, Al-Shouf Cedar Reserve and Ammiq Wetland, that are fast becoming a major natural attraction for Lebanon and the region.

The Core Zone of the SBR consists of the protected areas of Al-Shouf Cedar Reserve (Law 532), Ammiq Wetland, and private lands.

The Buffer Zone consists of municipal lands incorporated into the Al-Shouf Cedar Reserve (Law 532), and private lands.

The Transition Zone consists mostly of private lands, municipal lands, and religious trusts (Awqaf).

### **2.2 Physical characteristics**

#### **2.2.1 Geology (Map)**

The dominant geological feature of the SBR is Mount Lebanon, a high mountain range running north-south the length of Lebanon and parallel to the Mediterranean coast.

The SBR comprises rocks from the third geological era (Pliocene) which has undergone major tectonic movement that divided Mount Lebanon into two parallel parts. The eastern range is now called the Anti-Lebanon and the western range is called Mount Lebanon.

These two mountain ranges are separated by the Bekaa Valley which is composed of recent infill sediments making it an agriculturally fertile valley. From a geological point of view this valley is very important as it is the northern extension of the Great Rift Valley in Africa.

The whole of the Shouf Mountain is made up of cavernous limestone, with many surface features such as dolines indicating the underlying cavernous form of the mountain range. One particularly noteworthy cave, estimated to be 700 meters long, is located near Niha village. Villagers report an abundance of stalactites and stalagmites and that there is an underground body of water.

The geomorphology of the eastern slope SBR (historically known as the Barouk mountain) is characterized by a diminishing steepness as we move from north to south. The situation on the western slope is the opposite – an increasing steepness. South of Dahr El Baidar is the highest peak on in the SBR at 2000 meters, and the mountain range becomes increasingly narrow towards the south.

The main geological attractions are:

- 1- The fossils of Jabl el-Barouk: the fossilized shellfishes and amber containing insects.
- 2- The Nabe' el-Safa and the Nabe' el-Barouk: two natural and abundant springs.
- 3- The Nahr el-Barouk Valley that includes: Birket el-Arouss bridge, Birket el-Bzouz in the Wadi el-Bzouz, and the lower section of the Barouk Valley in the area of Kahlouniyyé.
- 4- The cliffs of Niha that dominate the Nahr Aray Valley, the pine forest of Bkassine and a part of Marj Bisri.
- 5- The Nebi Ayyoub: a very important place of worship that offers a view of the entire region
- 6- The cascades of 'Azzibé and Jezzine: they flow into the Nahr Aray Valley.
- 7- The Marj Bisri: it was formed by the millennial storage of fluvial deposits (from the Quaternary).

### **2.2.2 Soil**

The physical characteristics of the soil of the SBR are homogenous belonging to the red brown Mediterranean soils formed on hard marl limestone, are derived from Jurassic, Balthonian, Callovian to Oxfordian-Portladian marl limestone, and the stone contents range from 80-90%.

From an erosion point of view these soils are in a state of equilibrium due to high permeability, mask of calcareous fragments, good vegetative cover, and good drainage.

### **2.2.3 Elevation**

Highest elevation is 2000 meters and the lowest is 1100 meters

### **2.2.4 Climate**

A typical Mediterranean climate with four distinct seasons where the average temperature of the warmest month (Aug) is 20 °C, and the coldest month (Jan) is 4 °C

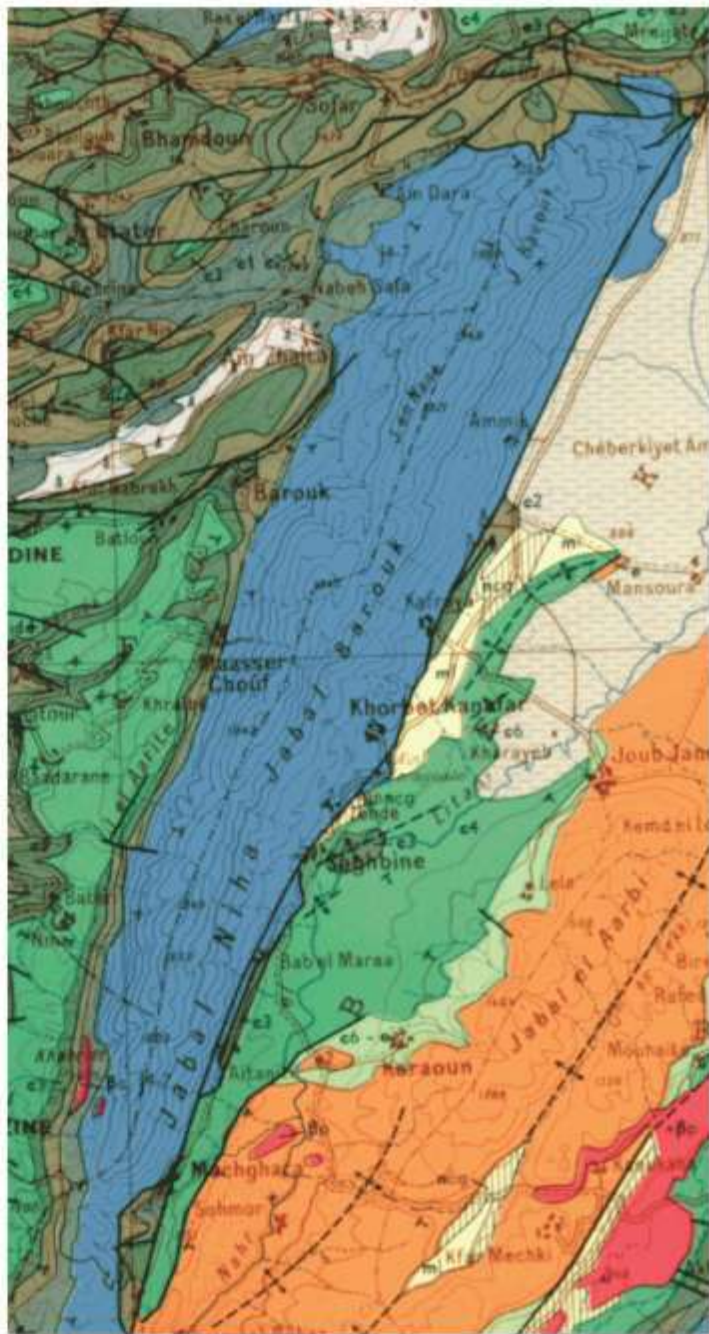
The summers are warm and dry while the winters are cool and wet

### **2.2.5 Precipitation**

Mean annual precipitation is 900 mm (recorded at an elevation of 1500 meters)

Precipitation is the source of both surface streams and groundwater - the major portion of this occurs as rain, with snowfall at the upper elevations





Carte géologique du Jabal el-Barouk et du Jabal Niha  
 Extrait de la "Carte géologique du Liban" au 1:200 000e, dressée par Louis DUBERTRET, 1955

**Map: Geological Features of the Shouf Biosphere Reserve**

### **2.2.6 Hydrology**

Surface water flows originating on the range are mostly seasonal but some are perennial. Underground water generates outflow rivers such as the Al Awali River (known as Al-Barouk river) and Damour River (known as Al-Safa river).

The summit of the range is considered as a divide between two hydrological systems because of the difference between the two slopes of the mountain. The eastern slope is much steeper and favors surface stream flows, whereas the western slope is less steep and favors ground water aquifers.

The rivers that flow in the valleys are the major source of agriculture irrigation and supply a dozen Shouf villages with domestic water and some of the western Bekaa villages. It is also the main source of water for the Ammiq Swamp in the Bekaa.

Reference:

Biological Diversity of Lebanon – Country Study Report, Ministry of Agriculture/Lebanon and United Nations Environment Programme (UNEP), 1996

## **2.3 Natural characteristics**

### **2.3.1 Landscape**

The rugged undeveloped ridge system of Mount Lebanon forms a distinct skyline that is enhanced in winter with a cover of snow and visible from great distances in all directions.

To the east of the Mount Lebanon ridge is the grandeur of the Bekaa valley that is vividly patterned by green agricultural fields that contrast with the rugged starkness of the Anti-Lebanon Mountain range. The most spectacular feature of the Anti-Lebanon range is Mount Hermon in the far south.

To the west of the Mount Lebanon ridge are the world famous cedar forests of the Shouf region that give way to the surrounding villages with red tile roofs. In summer, small grassy meadows persist in doline depressions, and contrast with the surrounding starkness of the white/gray limestone. On clear days the Mediterranean Sea may be seen from the summit of the mountain range.

In the south the Qaraoun Lake sits between the eastern Anti-Lebanon mountain range and the western Mount Lebanon range amid the agriculturally patterned landscape of the Bekaa valley. At the local/precinct level several of the cedar stands, in particular the Maasser Al-Shouf, are recognized as outstanding scenic landscapes, the larger cedars contributing in a most distinctive way to the landscape.

Individual trees can and do attract a lot of positive response from visitors to the area. The aesthetic experience of seeing some of the larger cedars is undoubtedly enhanced for the visitor by awareness of the important part they played in the history of Lebanon. These elements of the Shouf Biosphere Reserve have always been, and continue to be, valued as scenic landscapes.

### 2.3.2 Ecosystems

According to Corine Classification (1999), the reserve belongs to three Mediterranean levels:

- 1) the "Supra-Mediterranean Level" of vegetation which extends over the lower parts of the eastern and western slopes up to 1500 meters of altitude, with oak trees as dominant species, but on the western slopes the cedar trees dominate between 1050 - 1925 meters;
- 2) the "Montane Mediterranean Level" that covers both slopes between 1500 and 1900 meters with cedar dominant trees on the western slopes and absence of cedar trees on the eastern slopes where the oak and azarole trees take place; and
- 3) the "Oro-Mediterranean level" of vegetation which extends above 1900 meters.

The list of Al-Shouf Cedar Reserve species includes 436 identified plant species distributed over 61 families. The reserve provides habitat to 25 internationally and nationally threatened species, 48 endemic to Lebanon, or Lebanon and Syria, or Lebanon and Turkey, whilst 214 species are restricted to the Eastern Mediterranean or Middle East area.

The following 14 species deserve special mention:

- 1) *Cedrus libani* which is the symbol of Lebanon and main significant component of the reserve,
- 2) *Quercus brantii* look for its forest cover which characterizes the site,
- 3) *Arrhenatherum elatius* and *Melica inaequiglumis* because they are rare and localized in the reserve where they have suffered in the near past from grazing,
- 4) *Helichrysum pallasii* due to its status as threatened in the past and not very common at all heights of the reserve,
- 5) *Tulipa montana* and *Phytolacca pruinosa* for their ornamental and economic values and for the fact they are found in very limited numbers within the reserve.
- 6) *Cephalaria cedrorum* because of its endemism to Al-Shouf Cedar only,
- 7) *Gundelia tournefortii* as locally threatened because it is heavily collected and uprooted by people and for its consuming value, high demand and high price,
- 8) *Origanum ehrenbergii* and *Origanum syriacum* as well as *Rhus coriara* which are considered multipurpose species and consequently widely harvested by people, and
- 9) *Geum urbanum* and *Micromeria myrtifolia* for being highly recommended medicinal species.

### 2.3.3 Flora

The SBR harbors a rich flora, many of them medicinal, edible, and aromatic plants. The reserve is home to 25 internationally and nationally threatened species; 48 endemic to Lebanon or the Syria/Lebanon/Turkey area; 14 rare species; and 214 species that are restricted to the Eastern Mediterranean or Middle East area.

The SBR, however, is most famous for hosting the largest stands of Lebanese cedar (*Cedrus libani*) in the country. The Cedar of Lebanon is a highly symbolic, world-famous conifer tree, and one of the most cited plants in history, religion and mythology. The SBR hosts about 620 hectares of cedar forest, which are largely confined to the steeper and less accessible areas. The SBR represents the natural southern limit of this tree. Nowadays the cedar forest, protected from grazing and other human interference, is showing clear signs of natural regeneration.

Whereas the cedars are found at the higher altitude of the western slopes of the Shouf, the lower altitudes and eastern slopes are the domain of evergreen and broadleaf East Mediterranean oaks, such as *Quercus infectoria*, *Quercus calliprinos*, and *Quercus brandti* sp. *Look* – an endemic subspecies to the Reserve. Many of the oak forests have been subject to regular harvesting for firewood and charcoal production, resulting in extensive areas of coppiced oak woodland and low forest with shrub vegetation covering most of the remaining areas.

Finally, a large portion of the SBR, especially in the most degraded areas (mostly above 1900 meters) is dominated by scrubland and high mountain pastures. These ecosystems are particularly rich in aromatic, edible, and medicinal herbs and plants.

For the scientist, as well as the visitor, it is important to remember that human intervention in the region of the SBR is as old as recorded history. From the pristine forests mentioned in the Epic of Gilgamesh over 5000 years ago - to the exploited forests during the Sumerian, Babylonian, Egyptian and Phoenician civilizations - to the heavy cutting mentioned in the Old Testament for cedar and pine logs - to the more recent clear cutting of remaining cedars, pines, oaks during the Ottoman Empire followed by the French and British mandates – the area has had its share of uncontrolled human intervention.

#### **2.3.4 Mammals**

The Al-Shouf Cedar Reserve is one of the last remaining areas in Lebanon where larger mammals that once roamed the region can still be found, such as the wolf, wild boar and wild cat - or can be reintroduced such as the ibex and mountain gazelle.

Wolves are few and their numbers are unlikely to hold a stable population, due to the absence of large herbivores on which the wolf feeds. Striped hyenas are found on the borders of the reserve, mainly feeding on the garbage dumps and agricultural crops of surrounding villages. Wild boar, wild cat and jungle cat have all increased in numbers since the reserve was established, as well as the jackal, red fox, porcupine, and squirrel. The gazelle is sporadic in the area.

#### **2.3.5 Birds**

Over 250 bird species have been recorded in the SBR and the Ammiq Wetland (the wetland is a Ramsar site and Important Bird Area-IBA). The birdlife of the Shouf mountains includes rare or endemic birds such as the Syrian serin (*Serinus syriacus*), Eagle owl, Chukar partridge, Long-legged buzzard, etc. The whole area, placed strategically between Europe, Africa, and West Asia, is very important for bird migration. Every year countless storks, birds of prey and other migrants pass over the SBR and use it as a roosting site.

#### **2.3.6 Reptiles and amphibians**

The region contains 31 species, including chameleon, tortoise, and several species of snakes, lizards, frogs, and toads.

## **2.4 Socio-economic characteristics**

### **2.4.1 Cultural heritage**

The Shouf is a nexus of many cultures, religions, and historical events, all of which have left an imprint that makes the area's cultural heritage as rich as its ecosystems. The following are a few examples of its cultural and historical landmarks:

#### **Nabi Ayyoub (Prophet Job)**

There is no exact date on the construction of this place of worship. According to a popular tradition in Niha, the prophet Job became ill in Houran and emigrated with his wife to settle on a mountaintop in Niha el-Chouf where he recovered. The site, in its present form, dates back to 19th and 20th century.

#### **Qalaat Niha (Niha Fortress)**

The cave fortress of Niha is called Cave of Tyron (Frankish sources) and Chquif Tayroun (Arabic sources). It is carved into the rock of a cliff overlooking the Bisri and the 'Ary valley. From its strategic location, it monitors the road between Sidon and the Beqaa. This fortress is shaped like a cave and is over a hundred meters deep. Chambers and rooms were dug to shelter the soldiers. It has water in abundance through a system of collecting rain water. Water was also channeled through a pipe from the 'Ain el-Halquoum spring. It also had a considerable number of silos for storing provisions. The Emir Fakhreddine II, persecuted by the Pasha of Damascus, found refuge in the cave fortress with his family in 1633 before his eventual capture and execution in Istanbul in 1635.

#### **Ain El-Halkoum (Spring of Halkoum)**

Located near the fortress of Niha to the south west of the village of Niha. It is characterized by an abundance of water, and the ruins around it attest to a former settlement. Archaeological evidence shows that the water was channeled from this source to the fortress of Niha in the days of Emir Fakhereddine. We can still see the traces of the water pipe leading from the source to the fortress. It was probably built by the Emir Fakhreddine in the 17th century.

#### **Saint Georges Church**

There is no specific date regarding the construction of this church in Niha, but folk stories say it is more than 140 years old. It was probably built in the time of Magarious Youssef al-Haddad. It is said that a number of miracles took place in this church.

#### **Saint Joseph Church**

This church was constructed in Niha during the rule of Emir Fakhreddine. It is claimed that the Abou Rached family settled in Niha after fleeing from the village of Bessaaleh in the North, and that during a visit from Emir Ali son of Fakhreddine, the Abou Rached family gave him a grand reception. As a reward, he granted them 25 Liras of Gold to construct a house and a church.

#### **Qab Elias Castle**

This once powerful Druze fortress served as a guardian outpost controlling the road that linked Beirut to Damascus, and a marching post for the Druze and Chehab rulers of the South Bekaa or Wadi Taym.

### 2.4.2 Population distribution

Village	Religion	Economic Activities	Population
Ain Dara	Druze, Christian	Employees, Agriculture	7500
Ain Zhalta	Druze, Christian	Employees, Agriculture, Pastoralism	6000
Bmohray	Druze, Christian	Employees, Agriculture	2500
Barouk	Druze, Christian	Employees, Agriculture, Pastoralism	6000
Batloun	Druze, Christian	Employees, Agriculture, Pastoralism	3500
Maasser	Druze, Christian	Employees, Agriculture	5000
Khreibeh	Druze, Christian	Employees, Agriculture	2500
Mrousti	Druze, Christian	Employees, Agriculture	2300
Jba'a	Druze, Christian	Employees, Agriculture	2000
Niha	Druze, Christian	Employees, Agriculture, Pastoralism	7000
Baadaran	Druze, Christian	Employees, Agriculture	3000
Ammiq	Christian	Employees, Agriculture	1000
Aana	Christian	Employees, Agriculture	1500
Kefraya	Muslim, Christian	Employees, Agriculture	1200
Kherbit Kanafar	Druze, Christian	Employees, Agriculture	3000
Ain Zebdy	Christian	Employees, Agriculture	500
Saghbine	Christian	Employees, Agriculture	6000

### 2.4.3 Demographic trends and human use

Most of the estimated 60,000 to 70,000 people who inhabit the villages around the SBR depend on agricultural activities. However, an increasing number of them are leaving their villages to become construction workers, government, and small business employees. The trend is towards a

downscaling of traditional agricultural activities as a result of an aging population, poor marketing strategies, soil degradation, and excessive use of pesticides and fertilizers.

Unfortunately, security issues and political instability have also had a marked impact on people's livelihoods. The 2006 war, in particular, was a breaking point, and economic activity has not yet returned to pre-war status. The lack of employment opportunities has led to increased migration, and local society is heavily dependent on revenues from Lebanese who live and work abroad.

#### **2.4.4 Historic land use prior to establishment of the nature reserve**

The cedar forests of Lebanon are among the oldest documented (and used) forests in history. The cedars were important enough in the history of man to be traceable to the very earliest written records, that of the Sumerians in the third millennium BC. In the ancient Sumerian story, “The Epic of Gilgamesh”, one of the oldest pieces of literature in the world, the Cedars feature prominently. Gilgamesh has since been recognized as King Gilgamesh of history and according to the epic he visited Mount Lebanon.

It was the Phoenicians along the coast of present-day Lebanon and from such ancient cities as Byblos, Tyre and Sidon who became the principal dealers in the timber of the cedar. Indeed, the cedars made a special contribution to the development of the Phoenician civilization by providing the timbers with which they developed their famous sea-going merchant boats thus becoming one of the first, if not the first major sea-going trading nation in the world.

The Phoenicians traded the cedar to Egypt, until Egypt in turn conquered the land of the cedars and gained direct access to the forests, which were highly prized in the building of temples and boats. Later the Babylonians took a similar interest in the cedars and obtained them for use in building the fabled city of Babylon.

People around the world know of the cedars of Lebanon because of the numerous references in the Hebrew texts of the Old Testament. The Bible records in some detail how King Solomon, King of Israel, requested of King Hiram of Tyre to supply him with cedar wood to build a temple and a palace in Jerusalem.

In the 6th Century BC, Persian control of the Phoenician ports provided the Persians with the means of assembling a navy for use against their enemies the Greeks who were already embarrassing the Persians with their mobility in the Mediterranean as they leased and copied the Phoenician triremes.

The expansion of the Roman Empire into Syria and Lebanon had its detrimental effect on the cedars until the Emperor Hadrian installed markers around the boundary of the remaining forests and declared them as Imperial Domain. Specimens of these markers have been preserved and held in museum collections. The Ottoman Turks deforested all of the cedar growing areas within easy transport distance of their Hijaz railway to provide fuel for their wood-burning engines. Only the highest and most remote groves escaped damage.

## 2.4.5 Current land use after the establishment of the nature reserve

At the time of the establishment of the Al-Shouf Cedar Reserve in 1996, a number of adverse practices went largely uncontrolled such as: wood cutting, overgrazing, barbeque fires at the base of ancient cedars (leading to their death), accumulation of trash, carving of names and initials on the trunks, to name but a few.

Since the establishment of the Al-Shouf Cedar Reserve in 1996, a halt was put to all the cutting and burning of trees, charcoal production activities, and uncontrolled grazing of goats. This positive change in land use within and around the protected area manifested itself in a dramatic change to the vegetative cover of the area. The natural regeneration that took place at the periphery of the cedar forests, as well as the rejuvenation of the oaks and pines, has since been well document throughout the area. In addition the grassy meadows persisted longer in the spring and summer giving young seedlings of larger trees a better chance of establishing themselves.

Land use depends to a large extent on land tenure. The approximate land tenure in each zone of the SBR has been calculated as follows:

ZONE	NATIONAL	MUNICIPAL	RELIGIOUS TRUST	PRIVATELY OWNED
Core zone	10%	80%	0%	10%
Buffer zone	0%	10%	0%	90%
Transition zone	0%	20%	20%	60%

**NB:** No important changes in land tenure are forseen at the present time, however suggestions have been made to the Lebanese Government to purchase all private properties in the Core Zone to maintain the integrity of the SBR. The importance of such a purchase should not be ignored.

Possible adverse effects of land uses or activities occurring within or outside the SBR:

Visitor numbers: As previously indicated the number of visitors to the core zone of the proposed Shouf Biosphere Reserve are increasing every year (28,067 in 2004). However the Management Plan clearly sets the policies regulating visitor activities and restricts them to well defined walking trails and scenic areas.

Development activities: Housing estates, in the buffer and transition zones of the SBR, are a potential threat. The declaration of a biosphere reserve in the area will encourage a more responsible and sustainable approach to this activity.

Hunting: The lack of enforcement of any rules or regulations concerning hunting in Lebanon is a grave threat to all forms of wildlife, particularly birds. The most serious threat is to migrating birds of prey during their bi-annual passage over the proposed SBR.

## 2.4.6 Future land use as a biosphere reserve

The Shouf region already serves as a pilot site for promoting the sustainable development of the region by encouraging the conservation of nature, preservation of water catchment areas, protection of scenic area, controlled development, tourist facilities and clean roads. The SBR and the municipalities of the region are at the forefront of the movement to improve the income generating capacity of the area without causing irreversible harm to its natural resources.



The names of major towns nearest the SBR in the Mount Lebanon Governorate are: Niha, Bater, Gebaa, Mrousti, Haret Jandal, Baadaran, Moukhtara, Botmi, Ain Qania, Amatour, Khraibi, Maasser, Batloun, Barouk, Ain Zhalta and Bmohray

The names of major towns nearest the SBR in the Bekaa Governorate are: Ammiq, Aana, Kefraya, Kherbit Kanafar, Ain Zebdy, Aytanit, Bab Maria and Saghbin.

## **CHAPTER 3. DIAGNOSIS OF MANAGEMENT STRUCTURE**

### **3.1 Existing management infrastructure**

#### **3.1.1 Institutional setting**

The SBR is under the authority of the Lebanese Ministry of Environment, which manages it through the Appointed Protected Area Committee (APAC) that includes among its members the Al-Shouf Cedar Society, the Mayors of the larger villages, and independent environment experts. APAC liaises with the SBR's Management Team, which deals with the reserve's day to day management and planning.

According to the Stable Institutional Structure for Protected Areas Management (SISPAM) project:

- 1- The responsibility of Protected Areas (PA) management in Lebanon is under the jurisdiction of the Ministry of the Environment (MOE). The latter establishes two parties in this perspective:
  - (a) The management team (MT), consisting of 7 key positions, is responsible for the operation of the PA (such as administration, management, technical and maintenance activities, protection, public awareness, communication and scientific investigation)
  - (b) The Appointed Protected Area Committee (APAC) is responsible for decision-making and achieving the objectives of the management of the site. APAC members consist of volunteers, designated by ministerial decision (MOE), representing the local communities (municipalities, district commissions), university experts, environmental NGOs, or representatives of institutions (Ministry of Agriculture).
- 2- APAC forms the link between the MOE and the MT, whereby it works in close collaboration with both parties. APAC supervises the work of the MT and ensures the proper implementation of the management plan and the budget, and reports regularly to the MOE. However, the members should be volunteers that are sincerely dedicated to their responsibilities.

Since the ultimate authority of PA management is vested in the MOE, it is responsible for making sure the APAC and MT members are managing the PAs properly, in addition to authorizing contracts during recruitment and regulating resignations. On the following pages are brief job descriptions for MT members standardized for all PAs, including the skills, knowledge, and obligations required for recruitment. However, these job descriptions can be customized to the respective PAs, especially those with limited human resources capacity. In such cases, it is up to the APAC to redefine the tasks of the MT members, and re-assign to one person the duties of another.

### **3.1.2 Current staff**

The SBR Management Team is currently made up of 13 permanent/4 temporary staff members, all of whom are residents of the Shouf region. According to the SISPAM classification, the Management Team of the SBR should conform to the broad classifications below:

#### **Site Manager (*Administration and Management*)**

- The Site Manager's mission is to implement the management operations in the PA.
- The Site Manager leads a team, and his/her job involves performing a wide variety of activities, such as supervision, management, coordination, as well as irregular hours
- Applicants should have relevant professional experience and/or a BA/BS degree in Environmental Sciences, Natural Resource Management, Agriculture, Biology, or other related fields
- Applicant should be fluent in Arabic and English. French is considered a plus
- Successful applicants will be offered a contract for a full time position
- Residence in the vicinity of the PA is a plus
- A driving license is required

#### **Administrative Assistant (*Administration and Management*)**

- The assistant's mission is to perform all aspects of data entry, every day secretarial work, and deal with accounting and payment operations
- Applicants should generally have professional experience in the same type of field with an education level up to BA/BS
- Successful applicants will be offered a contract for a FT/PT position
- Applicant should be fluent in Arabic and English. French is considered a plus

#### **Guard / Ranger (*Maintenance and Surveillance*)**

- The guard's job is the operational management of site, and for authorized agents the enforcement of the laws protecting nature
- Applicants should have similar professional experience and a high school certificate
- Baccalaureate holder and/or speaker of other languages in addition to Arabic are a plus
- A driving license is required
- Successful applicants will be offered a contract for full time position
- Residence in the vicinity of the PA is also a plus
- He/she is placed under the authority of the site manager
- He/she is independent in the field in carrying out the assigned missions
- He/she will work with the Awareness Coordinator and the Scientific Coordinator
- The Guard may have irregular workloads when there are seasonal peaks of activity
- In case of a problem, the information must be reported immediately to the site manager

### **Awareness Coordinator (*Public Awareness and Communication*)**

- The mission of the Awareness Coordinator is to design and implement public awareness and sensitization projects aimed at exploring and conserving the rich heritage of the PAs
- Applicants should have professional experience with initial training up to level BA/BS
- Driving license is required
- Successful applicants will be offered a contract for a FT/PT position
- Applicant should be fluent in Arabic and English. French is considered a plus
- Under the direct authority of the site manager, the Awareness Coordinator will work with the whole site management team
- The Awareness Coordinator may have an irregular workload

### **Ecoguide (*Public Awareness and Communication*)**

- The Ecoguide's mission is to lead the guided visits of the site
- A short internship on the site will be required
- A Baccalaureate certificate and fluency in Arabic, English and French
- Residence in the vicinity of the PA is a plus
- The Ecoguide works under the authority of the Awareness Coordinator/Site Manager
- The Ecoguide may have irregular workloads

### **Scientific Coordinator (*Thematic and Scientific missions*)**

- Scientific Coordinator's mission is to organize the scientific activities in the PA
- Applicants should have professional experience and a BS degree in Agriculture, Biology, Environmental Sciences, Ecosystem Management, Natural Resources Management or other related fields
- Successful applicants will be offered a full time position
- Driving license required
- Scientific Coordinator works with all of the management team under the direct supervision of the Site Manager
- Independent in carrying out the missions assigned to him/her
- Scientific Coordinator may have irregular workloads

### **Local Development Coordinator (*Thematic and Scientific missions*)**

- The mission of the local development coordinator is to contribute to the integration of the PA into the local and regional socio-economic context
- Applicants should have professional experience and a BA/BS degree in Economy, Business, Urban Planning, Sociology or in other related fields
- Driving license required
- Successful applicants will be offered a contract for a FT/PT position
- Directly responsible to the PA coordinator, the job will be carried out as part of a team and involve direct and permanent contact with local parties involved

### **3.1.3 Staff distribution**

The Management Team currently occupies a rented five-room apartment in Simkanieh that serves as its office and center of operations. Despite its central location, it is not an appropriate setting for the largest and most popular protected area in Lebanon.

A new location for the headquarters of the SBR was found in 2009 in the town of Maasser el Shouf that includes a visitor/information center, facilities for conferences and workshops, and gift shop. This property, now called “Maasser Park House”, was purchased by the Agence Francaise de Development (FFEM/AFD) and is being restored by the Italian Cooperation Office/Italian Embassy in Lebanon -see Project 6(a).

Transportation expenses for the Management Team for travel within and outside the SBR is costly due to high fuel prices and the expense of maintaining the vehicles in good working order. Motorbikes, hybrid vehicles and electric cars are being considered for the future.

### **3.1.4 Staff concerns**

The three major concerns face the Management Team:

#### **1- Financial Stability:**

During the first five years of the Protected Areas Project (1996-2001) staff salaries were provided by the GEF funded project on the understanding that the MOE would assume a substantial part of the financial needs of the three nature reserve (Shouf, Ehden and Palm Islands) through its annual allocation to each. Unfortunately these allocations were too small to meet the needs of the staff and were rarely paid on time due to budget constraints in the MOE.

Thus, due to the limited allocations that the MOE provides for staff salaries, the ASC has had to secure the balance through the income it earns from entrance fees and donations that it solicits.

#### **2- Professional Qualifications**

Most of the staff of the SBR are well qualified and have performed admirably under very difficult situations. However, not all the staff are sufficiently qualified to carry out their duties satisfactorily, and they should be replaced as soon as possible.

The determination of who is (and who is not) qualified must rest with the APAC and MOE based on the qualifications spelled out in the SISPAM report.

#### **3- Staff Numbers**

As mentioned previously, 13 permanent and 8 temporary staff members make up the SBR Management Team, all of whom are residents of the Shouf region. This number is far too small for the large area covered by the Shouf Biosphere Reserve.

It is estimated that double that number (26 permanent and 16 temporary staff) will be required during the next few years to adequately manage the reserve, protect its valuable resources, and handle an increasing number of visitors.

## **3.2 Stakeholders**

A large number of local, national, and international stakeholders play an important role in the development of the SBR as supporters, partners, contractors, beneficiaries, and providers of technical and financial assistance.

### **3.2.1 Local stakeholders:**

- 24 municipalities of the Shouf and Aley and West Beqaa districts
- Federation of Municipalities of the Higher Shouf (Moukhtara)
- Al-Shouf Cedar Society (ACS): a non governmental organization that plays a critical role in the management of the SBR
- Appointed Protected Area Committee (APAC)
- Local NGOs: Green Orient, Friends of Green Environment, Lebanese Home for Environment
- Small and medium entrepreneurs in the rural economy sector: beekeepers, farmers, shepherds, collectors
- Agriculture-related enterprises (i.e. Kefraya Winery)
- Private land owners and providers of tourism services such as: restaurant owners (50); guesthouse owners (10); hotel and hostel owners (10); local guides (50); shop owners (50)
- Local schools and education associations

### **3.2.2 National stakeholders:**

- Lebanese Ministry of Environment (MOE)
- National NGOs: AFDC, SPNL, A Rocha Lebanon, Arcenciel, Lebanon Mountain Trail Association (LMTA) etc
- National Eco-tour operators: Responsible Mobilities, Lebanese Adventure, Esprit Nomade, Liban Trek etc.
- Lebanese Media (TV, radio, press)

### **3.2.3 International and regional stakeholders:**

- IUCN (particularly Regional Office for West Asia and Middle East)
- International UN Organizations: UNDP, UNESCO (Man and Biosphere Programme)
- Members of the Donor Community active in Lebanon: Italian Cooperation, GTZ, USAID, SDC, AFD, European Commission, Ford Foundation, Rotary Club
- Embassies of donor countries (Japan, USA, Finland, Canada etc.)
- Royal Society for the Conservation of Nature (Jordan)

### **3.2.4 Stakeholder contribution**

Stakeholders have contributed both directly and indirectly to the preparation of the 2012-2017 SBR Management Plan. Municipal Councils, NGOs, and active citizens in villages surrounding the SBR have offered their opinions and given advice to the authors of *Land of Cedars* by Marco Pagliani, *Marketing and Business Plan* by ECODIT, and the *Ecotourism Plan* by Pascal Abdallah. In addition, The Management Team of the SBR is in regular contact with a number of stakeholders in the Shouf region. The Management Team will also convene a series of workshops to present the Arabic version of the Executive Summary of the SBR Management Plan 2012-2017 by the end of 2012.

### 3.2.5 Stakeholder matrix

Stakeholders	Rights to land and resources	Management skills	Relation with resources	Economic reliance on resources	Social reliance on resources	Interest in management	Compatibility bet. activities of stakeholder and resource conservation
MOE	✓	✓	✓	X	X	✓	✓
APAC	X	✓	✓	X	X	✓	✓
Municipal Councils	✓	✓	✓	✓	✓	✓	Variable
Shouf Cedar Society	X	✓	✓	✓	✓	✓	✓
Private Landowners	✓	Variable	✓	✓	✓	Variable	Variable
Local NGOs	X	Variable	✓	✓	✓	✓	✓
National NGOs	X	Variable	Variable	X	X	✓	✓
Tour Operators	X	Variable	✓	✓	Variable	Variable	✓
Local Tourism Providers	X	✓	✓	✓	✓	✓	✓
Tourists and Visitors	X	X	Variable	X	X	Variable	Variable
Schools	X	X	✓	X	✓	X	✓
UN/ IUCN	X	✓	✓	X	X	✓	✓
International Donors	X	✓	✓	X	X	✓	✓

### 3.3 Current programs

Over the past ten years, the SBR designed and implemented a portfolio of projects for a total budget of almost US\$ 2,000,000. Most of these projects have focused on grassroots rural development, awareness raising, environmental education, and training.

Because most of the efforts of the SBR management team focused on developing socio-economic projects, the conservation side was largely neglected. A priority for the future is to obtain funding for activities addressing conservation/restoration of biological diversity in the SBR which is the “capital” on which development must be built. Thus it will be necessary to broaden and diversify the traditional pool of donors to the area.

#### 3.3.1 Main projects implemented by SBR during 2006–2007

##### 1- Pilot project for beekeeping and aromatic plants reproduction in the Mnassif area

**Objective:** Enhancing and developing the beekeeping sector and aromatic plant production  
**Activities:** Supported beekeepers and enhanced production; encouraged aromatic plant production; trained new beekeepers on disease control, packaging, marketing, and advertising. Also trained local women on sustainable use of aromatic plants, production, packaging and marketing their products  
**Budget/Source:** US\$100,000 from the Council for Development and Reconstruction

##### 2- Benefiting from the natural resources of the High Shouf

**Objective:** Boost tourism and nature-friendly traditional production in the High Shouf  
**Activities:** Developed infrastructure for ecotourism by rehabilitating guesthouses, and preserving and developing traditional/rural products. Capacity building of local communities thru ecotourism, rural development, and environmental awareness. Promoted the use of guesthouses, rural products, natural and cultural heritage of the Shouf  
**Budget:** US\$100,000 from the Council for Development and Reconstruction

##### 3- Sustainable use of edible, medicinal and aromatic plants

**Objective:** Conservation of wild plants and their sustainable use in and around the Reserve.  
**Activities:** Trained villagers on the use and packaging of wild plants to maintain quality and appeal. Raised awareness on importance of wild plants conservation amongst the local communities. Marketed products at the main entrances to the Reserve, supermarkets, hotels  
**Budget:** US\$15,000 from the World Bank

#### **4- Management of the southern sector of the SBR in collaboration with local communities**

**Objective:** Boost sustainable development/raise awareness in the southern sector of the reserve

**Activities:** Managed grazing in the southern sector of the Reserve. Raised awareness regarding poaching, as well as conservation and proper use of medicinal, edible and aromatic plants.

Supported the ecotourism program in the southern sector of the reserve

**Budget:** US\$30,500 from the GEF

#### **5- Rural development project in the southern sector of the SCR**

**Objective:** Enhance rural job opportunities in the southern sector of the reserve

**Activities:** Supported production of traditional foods and knowledge regarding their preparation. Supported beekeepers and women to enhance their production

**Budget:** US\$25,000 from the Council for Development and Reconstruction

### **3.3.2 On-going Work in the SBR 2006-2010**

#### **1- Construction of an eco-lodge in the western portion of the reserve in partnership with SCS, AFDC, SPNL and A Rocha**

**Budget:** US\$ 600,000 from SDC through RSCN

#### **2- Planting 100,000 cedar seedlings**

**Budget:** US\$ 350,000 from Al Ghanem (a private Saudi Arabian company)

#### **3- Restoration of income-generation after the July 2006 war**

**Budget:** 200,000€ from GTZ /IUCN

#### **4- Integrated project for the Shouf Biosphere Reserve, conservation / expansion of forest cover / support of eco-tourism**

**Budget:** 870,000€ from the Italian Cooperation

#### **5- General support to protected areas in Lebanon and development of a management plan for the Cedar Biosphere Reserve**



**Budget:** 400,000€ from the AFD.

**6- Awareness campaigns among local farmers and grazers to protect threatened mammal species particularly the wolf and hyena**

**Budget:** From the annual budget of the MOE

**7- Reforestation activities with 28,000 cedar seedlings on 30 hectare**

**Budget:** Five-year National Reforestation Program of the MOE

**8- Educate local communities, women, and bee-keepers in buffer zone of the SBR on the sustainable use of edible and aromatic plants**

**Budget:** US\$ 15,000 from the WB and UNDP

**9- Five-year forest fire action plan to protect forests**

**Budget:** Part of the program funded by the Italian Cooperation

**10- Eco-Tourism Program**

- 1) Establish 2 guesthouses in Khraibeh and Maasser El-Chouf
- 2) Set up 100 km of trails in and surrounding the SCR from Ain Dara to Niha
- 3) Open a new entrance for the southern sector of the Reserve (Niha Fort)
- 4) Build the capacity of 30 local guides
- 5) Publish brochures/booklets

**Budget:** WB through CDR, USAID through SRI and LMT project, Embassy of Finland

**11- Rural Development Program**

- 1) Establish 3 workshops in Jba'a, Baadaran and Mrousti equipped with necessary materials for rural products and honey production
- 2) Publish promotional brochures and booklets for 70 different rural products that have been prepared by women in the villages of the SBR

**Budget:** WB through CDR, Embassy of Canada

### **3.4 Infrastructure**

#### **Roads**

Dirt roads: The main dirt road, extending from Ain Zhalta/Bmohrai cedar forests in the north to Maasser Al-Shouf cedar forest in the south, was constructed in the 1960s by the Ministry of Agriculture as part of its cedar reforestation program. Other side roads were also constructed to facilitate the reforestation effort.

Asphalt roads:

Van tours with guides make use of both the asphalt and dirt roads. The van tours are followed by short walks in the forest, and they are the most popular with the larger and older groups.

#### **Walking trails**

There are over 15 walking trails in and around the forests of Barouk, Maasser and Ain Zhalta that vary from 1-7 km and are categorized depending on the time required and level of difficulty. These walking trails are the backbone of recreational activities in the SBR because they determine the courses followed by mountain marathons, snow shoeing, and mountain biking events that are gaining popularity with the younger visitors.

#### **Entrance huts**

- 1- Barouk Forest - with tourist information / rest rooms / walking trails / gift shop
- 2- Maasser Forest – with tourist information / rest rooms / walking trails / gift shop
- 3- Ain Zhalta/Bmohrai Forest- with tourist information / rest rooms / walking trails

#### **Environmental Awareness Center**

The Awareness Center in Ain Zhalta is equipped with a small museum and is used for lectures and workshops. It also provides special camping sites and overnight facilities.

#### **Ponds**

Highland Pond

Hilly Pond and wildlife observation hut (hide)

#### **Scenic overlooks**

The main scenic overlook is adjacent to a drinking hole that overlooks the Bekaa valley

#### **Interpretive signs**

Hundreds of small interpretive signs, as well a number of large bulletin boards, offer advice to visitors and assist them in the identification of major flora.

## **CHAPTER 4. MARKETING, ECOTOURISM, AND MONITORING PLANS**

### **4.1 MARKETING AND BUSINESS PLAN**

The Al-Shouf Cedar Society (ACS) launched its Rural Development Program in 1999, to support local communities by providing training and marketing outlets for their products. However, the program did not generate a lot of revenues, primarily because it developed and expanded spontaneously over the years. It was also hampered by the volatile political and security situation in Lebanon, which negatively impacted the ecotourism sector in Lebanon and the Reserve.

#### **Current Situation**

There are currently 82 food products carrying the Shouf Biosphere Reserve label, which are produced in a traditional way by local community households. Production is currently being centralized in three (3) workshops provided and owned by ACS (located in Mrousti, Baadarane, and Jba'a). ACS is not directly involved in the rural production process; Mr. Rizkallah Mahmoud, a program agent/coordinator who was contracted by ACS to oversee the rural program, is currently in charge of production, distribution and marketing. The agent contacts individuals (primarily women) from the local community to participate in the production process. They are reimbursed for their raw material and they receive payment for their services, while the agent provides any other needed supplies including jars and bottles.

Products are primarily sold at two (2) reserve entrances (Barouk and Maasser el-Shouf), where Reserve guides are responsible for product sale and promotion, and hence receive 15% of the total revenues from entrance sales as incentive pay. The ACS receives 10% of total revenues and the program agent receives approximately 25%, while the cost of production –i.e., income to local community- is estimated to represent the remaining 50% of gross revenues. In 2008, revenues from entrance sales were about \$28,000; the “best sellers” were cedar & oak honey.

#### **Proposed Marketing Strategy**

ECODIT proposes that ACS expands production gradually and seeks new outlets while maintaining the territorial image and uniqueness of the SBR. The marketing strategy is based on “selection and selectivity” (in terms of product range, distribution channel, and target market).

ECODIT suggests a more focused product range, in order to capture niche markets, focus on and improve product quality, and maximize returns. The new product range was based on a Boston matrix developed to classify products into Stars, Cash Cows, Question marks and Dogs, based on sale values for 2005-2008 - Stars are products that sold more than 300 items; Cash cows sold 150-300 items ; Question marks sold 100-150 items; and Dogs sold less than 100 items.

ECODIT proposes a new product range as follows: (1) a “Permanent collection” of 28 high-profit or promising items (Stars, Cash Cows, and Question marks), (2) an “Organic” collection of three items, (3) a collection of “new items” for product testing –no more than two items per year, and (4) a collection of “special orders”.

Product Prices were also modified, based on “premium pricing”, i.e. pricing near the high end of similar products from other initiatives, with an occasional 15% mark-up on select SBR products. Products that are exclusive to SBR can fetch even higher prices (e.g. wild thyme with pine seeds, cedar honey). See new categories and products in Exhibit 1.

**Selected List of “Permanent” Products include:**

**Jams** (Apricot, Bitter orange, Grape+almond, Fig, Fig+almond, Rose, Fig, Mulberry, Walnut)

**Honey** (Cedar honey, Oak honey, Honey with bees wax, Honey in pottery)

**Syrups** (Mulberry, Rose)

**Distilled water** (Orange blossom, Rose)

**Vinegar** (Apple)

**Herbs** (Pollen seeds, Sumac, Thyme with sesame, Thyme + wild pine, Coriander and garlic)

**Dairy & olive products** (Labneh - Baladi – cow, Labneh – Baladi – goat, Olives with Labneh)

**Others** (Carob molasses, Pomegranate molasses)

At present, ACS relies mostly on the summer season to sell SBR products, which should become a year-round activity to increase revenues. We reviewed possible marketing and distribution outlets in Lebanon and overseas, including (1) Reserve entrances (2 existing and 2 proposed/future entrances), (2) Wild Shops that ACS will establish near the Shouf Biosphere Reserve area, (3) Specialty outlets located in urban centers, (4) Exclusive outlets, (5) Guesthouse corners, (6) weekend stands during summer fairs and festivals, (7) and sales through established networks including arcenciel (5-8 items) and (8) Fair Trade Lebanon for export (1-3 candidate items).

**Program Responsibilities and Action Plan**

The roles and responsibilities for ACS and the Program Agent are currently not well defined; this is a source of tension and potential conflict in the future. ECODIT consulted with ACS and the Program Agent to find the best distribution of roles and responsibilities that would help develop and sustain the Rural Development Program. The Program Agent will assume lead responsibility for Production, Marketing, and Distribution. He will work directly with the local community to ensure sound and efficient production, and will be responsible for product marketing and distribution inside and outside the SBR. Production, marketing and distribution can be assumed by one person so long as the production output remains small to medium size (say less than \$100,000 per year). In the future however, when production exceeds current a certain threshold (say >\$100,000/year), ECODIT recommends that production is separated from marketing & distribution. ACS will continue to manage the overall Rural Development Program, ensure quality control, compliance with relevant social / economic / environmental standards, and will make all executive decisions.

Based on the above, ECODIT proposes the following action plan for the period 2009-2014:

**Administration & Quality Assurance**

- Adopt marketing strategy 2009-2010
- Review and approve allocation of responsibilities between program agent and ACS
- Brand Registration at Ministry of Economy and Trade
- Implement QA procedures 2009-2014 A ACS/Program Agent/LibanCert

- Create / Improve financial records (production costs, sales, returns, revenue distribution, sales outside the Reserve (fairs, exhibitions, etc.)
- Re-do the Boston matrix based on accurate profit margins and market share studies

### **Production**

- Adopt new/reduced product line based on suggested collections
- Shift production from community households to community workshops
- Assess production (incl. wild cultivation) capacity for sustainable use of natural resources
- Create product tracking system (barcode or unique numbering per batch produced, etc.)

### **Marketing & Distribution**

- Create attractive label and package
- Improve shelf display at reserve entrances
- Finalize product orders from FTL, aec, etc.
- Create mailing list of current and potential customers
- Prepare short-list of profitable fairs and exhibitions (annual participation)
- Create webpage for SBR products under SBR website.
- Examine and promote package offers/deals. 2010-2014 B ACS/Program Agent
- Establish contacts and set up “wild shops” in the Shouf area.
- Setup “SBR” corners at Shouf guesthouses (Niha, Khreibeh, etc.)
- Launch sales at the Park House
- Finalize agreement with Fair Trade Lebanon

### **Business Plan**

To increase sales, we believe that ACS need not invest much in promotion, but rather focus on ways to improve product display by redesigning the label, disclosing product ingredients, improving shelf display at Reserve entrances, displaying attractive advertisement posters at Reserve entrances, and creating “Biosphere Delights” package offers.

ECODIT developed a Business Plan for the period of 2010-2014. We have assumed that 2009 is a transition year during which ACS will deplete stocks not included in the new collection (i.e., select “questions marks” and all “dogs”) and revamp its administrative procedures including forms and record-keeping. Program revenues will be generated from sales at several possible outlets, which are based on conservative assumptions, summarized below:

**A. Sales inside the Reserve:** depends on visitor numbers, which is expected to reach 41,400 visitors in 2014. ACS will retain 10% of total revenues while Reserve guides will receive 15% (incentive pay).

**B. Sales outside the Reserve:** ACS will retain 10% of total revenues.

For the first year (2010), the total number of items sold will almost double due to improved packaging, advertisement, and more focused production (approximately 30 products, down from 82 products in 2008), as well as additional outlets (guesthouse corners and new fixed outlets). Sales will continue to increase in further years, but at a slower rate. Gross revenue will also increase with the increased number of items sold and increased product prices, reaching \$160,000 in 2014.

### **C. Operating Costs:**

1. Administrative Cost. We assumed that ACS staff spends variable time and effort to manage or coordinate the Rural Development Program (communication, transportation, coordination with Program Agent, LibanCert and producers). This was estimated to cost about \$500 per month (subject to 5% annual increase), and will be paid by the Program Agent.
2. Incentive pay to Rangers (entrances 1, 2). This constitutes 15% of Gross Revenues from the sale at Reserve entrances 1 and 2 (Barouk and Maasser el-Shouf).
3. Incentive pay to Rangers (entrances 3, 4). Likewise, this constitutes 15% of Gross Revenues from the sale at Reserve entrances 3 and 4 (Niha and Ain Zhalta), scheduled to start in 2011.
4. Wild Shop Salesperson. For a period of 4 months only (summer season), each Wild Shop will require one salesperson, who will be paid by the Program Agent a basic salary of \$600 per month (subject to 5% annual increase).
5. Organic and QC Certification. The annual cost of Certification for three workshops is \$750 (paid to LibanCert), including inspection. For the first two years, this cost is covered by the GTZ fund.
6. Commercial Barcode. This will cost up to \$450 per year, but will not be necessary for the proposed scale of operations or sale outlets. Therefore, we have indicated a value of \$0 in our cost table.
7. Miscellaneous. This is equivalent to 5% of Operating Costs.

### **D. Net Revenues:**

As shown in Exhibit 5, Net Revenues to ACS [Gross Revenues – (Investment costs + Operating costs)] will be about \$16,350 in 2014. This value is significant if we factor-in the revenues to the Biosphere community including producers (women) and the Program Agent.

### **Reference:**

Marketing and Business Plan for Rural Products (for the Shouf Biosphere Reserve), 2010, ECODIT Liban

### **Note:**

The recommendations of the Marketing and Business Plan have been incorporated into the following Management Plan projects:

**Project 7(a)** “Products from the Land of Cedars” whose specific objective is to support handicraft production and sale in the SBR by carrying out a quantitative and qualitative inventory of available and potential handicraft products and evaluating best opportunities for new production chains.

**Project 7(b)** “Nursery and Botanic Garden” whose specific objective is to secure seeds and cuttings from plants of selected native trees, shrubs and herbs to be used in plant conservation field work, forest landscape restoration, and community-based production and marketing of edible/aromatic/medicinal plants.

**Project 8** “Small Grants Program” whose specific objective is to support and encourage grassroots businesses by setting up a small grants scheme available to local actors, aimed at supporting innovative sustainable business, mainly in the areas of tourism, handicrafts, and agriculture/natural products.

## **4.2 ECOTOURISM PLAN**

### **Introduction**

The link between tourism and protected areas is becoming more important as tourism activities are relying more on natural heritage combined with cultural heritage. At the same time protected areas are also becoming more interested in the role of tourism in supporting conservation initiatives. Ecotourism is a field that is very dependent on effective and efficient planning.

### **Goals of the ecotourism strategy**

The goals of ecotourism in protected areas should always focus on conserving the environment, enhancing the quality of life for local communities, and improving the tourism product and service in a way that the ecotourism activity becomes a successful operation leading to socio-economic benefits. The Shouf Biosphere Reserve (SBR) has already achieved a certain level of these socio-economic and conservation benefits - despite the July 2006 war that brought destruction to Lebanon and a tremendous decrease in the number of visitors to the SBR.

Implementing the goals of ecotourism requires a national commitment to protected areas, and support to tourism opportunities that benefit conservation. However, tourism can have negative impact, if not well controlled, so the design of ecotourism activities needs to become a top priority in the management of the SBR. The SBR Ecotourism Strategy, as part of the SBR Management Plan, will focus on the role of ecotourism as an effective step in reconciling conservation of biodiversity with economic development.

The methodology adopted in the SBR Ecotourism Strategy was based on field work and a series of discussions with different stakeholders. Meetings, discussions, and workshops were held with the SBR management team, local communities, and a variety of key persons. This helped in formulating a strategic plan to improve income by increasing visitor numbers while minimizing threats to the environment.

### **Working with local stakeholders**

The SBR should consider increasing cooperative partnerships and develop a tourism strategy that relies less on government support and more on the SBR's partners. Building bridges with local stakeholders is essential to achieve positive changes in attitude towards the SBR. It is important to stress the need to respect the rights of local communities living near the reserve, and who in some cases, own land inside or adjacent to the SBR. This strategy is a down – top management model involving local communities in the planning, decision making and implementation process - in particular as it relates to providing seasonal transhumance paths, grazing in special zones, cutting wood, and charcoal production.

### **Minimizing threats from tourism activities**

While the revenues generated from tourism-oriented activities may help fund conservation, tourism itself may be a source of unacceptable social and environmental change - thus

threatening the values for which the SBR was established. To minimize the threats from tourism the following suggestions need serious consideration:

- develop “Green packages” for tourism that reach all types of tourists
- consider the closure of access roads inside and near the core zones
- limit car parking spaces and introduce pay parking in the villages
- incorporate an environmentally clean shuttle transport (bus or other means)
- introduce an entrance fee for more sensitive sites

### **Linking practice to guidelines**

The growing demand for tourism in the SBR currently challenges the capacity of the management team to meet this demand without a negative effect on the environmental and cultural values of the protected area. This deficiency in capacity must be addressed through increasing the level of skills in the management team and the private tourism sector. To achieve this there is an urgent need to develop a complete guideline or code of conduct that are clear and detailed as possible.

### **Tourism value chain**

Tourism in general, and responsible tourism in particular, is a highly fragmented industry composed of many small businesses that are connected and interdependent. In Lebanon the tourism chain is not a functional entity due to a multitude of factors such as the lack of planning and regulations by the public sector, and the lack of professionalism in the private sector. There is an urgent need to involve local micro- enterprises owned by residents surrounding the SBR.

The Tourism Value Chain concentrates on meeting visitor expectations and involves everything from pre-visit image and marketing right through to after sales care and commitment. Its key components are: pre-visit image and information; booking and reservation; arrival and welcome; experience; attractions and activities; infrastructure and environment; places to eat/stay; departure/farewell; and follow-up.

Each stage of the visitor’s ‘journey’ is important and a quality experience along each of the stages will result in a satisfied customer who will talk to friends and family about his good experience.

### **Tourism packages**

Tourism in and around protected areas must become a tool for conservation that contributes to the quality of life and economic opportunities of local communities. Tourism packages help to fulfill these goals by introducing the visitor to the uniqueness of the attractions, and at the same time benefit the local communities directly.

All the Discovery packages proposed in this study are composed of 2 days 1 night, with a large choice of activities and destinations. They are designed to encourage ‘slow travel’ allowing the visitor a more authentic experience and a better understanding of the natural and cultural heritage of the area. They are composed of 1 day hiking in the Biosphere reserve + 1 overnight in the



B&B at the villages + 1 cultural day at the villages. Most of these packages are for the summer season (mid April – mid October), but a good number of them are feasible in winter, whether or not they are combined with snow activities.

### **Developing the Niha Entrance**

Compared to other regions within the area of the SBR, the region of Niha el-Shouf (Niha) is very rich in tourism potential. With more time and financing it could become the hub of ecotourism in the southern portion of the SBR. Three main factors support the development of the Niha Entrance:

- 1- the wealth of natural, historical and geological attractions in the Niha area
- 2- the determination of the SBR management team to develop all the major park entrances
- 3- the positive attitude of the president of the municipality of Niha and his desire to see close coordination between the park and the village.

### **Marketing and Promotion**

The marketing process is shaped by clients' needs as well as the needs of the producer of goods and services. In this context, the management of the SBR is the producer, and visitors are the clients. It is important to remember that marketing needs to meet the goals of biodiversity conservation, protection of cultural heritage, and support of local communities - without neglecting the clients' needs.

One of the first tasks of the SBR management team is to establish the goals for its marketing strategy which includes strengthening the brand identity to increase awareness of the SBR, increasing both day visitors and overnight visitors with extension stay in villages, and meeting visitor expectation in the areas of quality and customer service.

### **Promotional efforts must include:**

- Maintaining regular contact with media, Tour Operators, Ministry of Tourism and other organizations. Host travel media and ask them to write about the new activities at SBR
- Market research identified water as a primary influence for tourists when making travel decisions. Include some water element (near the artificial lake) in the pictures used in future promotional material
- An interactive website for educational and learning activities for schools and teachers would be a very useful tool for schools. It helps spread the right information.

## Five Year Tourism Action Plan:

Issue	Action	Timeframe
<b>Financial support</b>	<ul style="list-style-type: none"> <li>- Raise awareness on biodiversity and protected areas values</li> <li>- Develop efficient fee collection</li> <li>- Identify an equitable tariffs policy and determine what activity should be subject to a fee</li> <li>- Install park-based tourism, building solid partnerships with the private sector</li> </ul>	2010-2015 2010-2015  2010-2015  2010-2015
<b>Local stakeholders</b>	<ul style="list-style-type: none"> <li>- Build bridges with local stakeholders to achieve positive changes in attitude towards the SBR.</li> <li>- Establish a local tour operating business that performs exclusively with the SBR</li> </ul>	2010-2015  2010-2015
<b>Minimizing threats</b>	<ul style="list-style-type: none"> <li>- Develop “Green packages” for tourism that reach all types of tourists thereby enlarging the market demand for this type of tourism</li> <li>- Consider the closure of access roads inside and near the Core Area</li> <li>- Limit car parking spaces and introduce pay parking in the villages</li> <li>- Incorporate an environmentally clean shuttle transport (purchase Hybrid Toyota Coaster buses)</li> <li>- Introduce an entrance fee for more sensitive sites</li> </ul>	2010-2015  2010-2015  2010-2015  2010-2015  2010-2015
<b>Linking practice to guidelines</b>	<ul style="list-style-type: none"> <li>- Adopting and implement strict international standards with no compromises to reach a balance between tourism business and protection of nature</li> </ul>	2010-2015
<b>The Internet</b>	<ul style="list-style-type: none"> <li>- Include more information on the SBR website, about the recreational activities and other facilities</li> <li>- Transform the SBR website from static to interactive</li> <li>- Create a group of SBR activist supporters</li> </ul>	2010-2015  2010-2015 2010-2015
<b>Printed material</b>	<ul style="list-style-type: none"> <li>- Create more friendly user maps for the SBR showing clear trails</li> <li>- Add beautiful and quality pictures to the leaflets, and make sure to include people in the photos</li> <li>- Adjust the length of stay in SBR package because the tourist won't spend 5 days in one region</li> <li>- Link the SBR with the villages</li> <li>- Include prices along with packages</li> <li>- Conduct educational tours for tour operators inside and outside the reserve</li> <li>- Take pictures with people enjoying a real activity</li> <li>- Develop a promotional tool such as, a yearly guide about the park, providing a broad spectrum of info</li> <li>- Develop a promotional educational guide for schools, describing in detail all the possible activities</li> </ul>	2010-2015  2010-2015  2010-2015 2010-2015 2010-2015  2010-2015 2010-2015  2010-2015  2010-2015

<b>Television</b>	<ul style="list-style-type: none"> <li>- Build contacts with all televisions in Lebanon and neighbouring Arab countries</li> <li>- Stress the desire of viewers to see more about nature reserves and protected areas in the region</li> </ul>	<p>2010-2015</p> <p>2010-2015</p>
<b>Booking and reservations</b>	- Enhance all the stages of communication and reservation at the SBR: the website, the brochures and booklets, the phone answering, the welcoming and information given at the park's entrances	2010-2015
<b>Arrival and welcome</b>	<ul style="list-style-type: none"> <li>- Improve the quality of service at the Maasser el-Shouf entrance with toilets facilities and a larger parking lot</li> <li>- Add an exhibit of interpretative posters similar to the one at el-Barouk entrance</li> </ul>	<p>2010-2015</p> <p>2010-2015</p>
<b>Experience</b>	<ul style="list-style-type: none"> <li>- Develop a customer-focused work ethic</li> <li>- Conduct continuous improvement training</li> <li>- Make service a philosophy of the park</li> <li>- Strive to understand customer needs and expectations</li> <li>- Monitor customer satisfaction</li> <li>- Develop management systems focused on customer</li> </ul>	<p>2010-2015</p> <p>2010-2015</p> <p>2010-2015</p> <p>2010-2015</p> <p>2010-2015</p> <p>2010-2015</p>
<b>Attractions and activities</b>	<ul style="list-style-type: none"> <li>- Chose a location in the cedar forest with a breathtaking panorama for meditation</li> <li>- Delineate hiking, snow shoeing, and cross country skiing trails with combinations and loops</li> <li>- Establish trails crossing different micro-systems, bird/animal watching, and storm watching</li> <li>- Chose locations in the buffer zone, or in the villages surrounding the SBR for adventure activities</li> <li>- Introduce events and festivals at the various entrances of the SBR</li> <li>- Link the SBR villages with footpaths and organize a cultural walking tour inside each village</li> <li>- Mark/map all important cultural sites in each village with a focus on the identity of each village</li> <li>- Find and encourage all the craftsmen in the villages to revive traditional crafts, and allow the visitor to watch</li> <li>- Chose/prepare one location in the buffer zone, or in the SBR villages, for special events that attract visitors</li> </ul>	<p>2010-2015</p> <p>2010-2015</p> <p>2010-2015</p> <p>2010-2015</p> <p>2010-2015</p> <p>2010-2015</p> <p>2010-2015</p> <p>2010-2015</p> <p>2010-2015</p>
<b>Infra-structure &amp; environment</b>	<ul style="list-style-type: none"> <li>- Incorporate Environmental Impact Assessments (EIAs) in the development of sensitive tourism areas</li> <li>- Adopt and implement strict international standards for the management of the SBR</li> </ul>	<p>2010-2015</p> <p>2010-2015</p>
<b>Departure and follow up</b>	<ul style="list-style-type: none"> <li>- Aim at leaving a positive impression and collect feedback re the visitor's level of satisfaction</li> <li>- Give the visitor a short "comment sheet" to fill out</li> <li>- Review the visitor's comment sheet seriously and</li> </ul>	<p>2010-2015</p> <p>2010-2015</p>

	responded to it accordingly - Maintain a continuous relation with the customer and send special invitations, newsletters, or cards	2010-2015 2010-2015
<b>2 days / 1 night</b>	- Calculate the cost of each package and their price	2010-2015
<b>Discovery</b>	- Contact service providers in villages and make sure they are properly trained	2010-2015
<b>Package design</b>	- Secure accommodation and lunch facilities in the villages for each package	2010-2015
	- Provide added value to the tourism experience by organizing leisure and educational activities along the hiking trails and in the villages	2010-2015
	- Feature some of the packages in brochures with appropriate pictures	2010-2015
	- Post the packages and their prices on the SBR website	2010-2015
<b>Developing the Niha Entrance</b>	- Create a link between the SBR, the LMT and the village of Niha by means of a hiking trail	2010-2015
	- Establish a cultural trail in and around the village with link to the LMT	2010-2015
	- Introduce a “Donkey Ride Tour” outside the village	2010-2015
	- Encourage other activities that highlight the specificity of the region	2010-2015
	- Install interpretation signs that explains the history of Emir Fakhreddine; the geology of the Fort ; etc...)	2010-2015
<b>Marketing and promotion</b>	- Conduct a survey among the visitors to SBR by filling a questionnaire before they leave the SBR	2010-2015
	- Establish goals for a marketing strategy which includes brand identity, awareness of the SBR, etc...	2010-2015
	- Shift from “mass marketing” to “target marketing”	2010-2015
	- Develop new products such as: new picnic areas, recreational areas (Niha), new campsites, etc...	2010-2015
	- Maintain regular contact with media, Tour Operators, Ministry of Tourism and other organizations	2010-2015
	- Include a water element (artificial lake) in the pictures used in future promotional material	2010-2015
	- Use the internet, in particular e-mail, to communicate quickly and efficiently with clients	2010-2015
	- Employ direct marketing to reach a targeted group of visitors to promote festivals such as the Khreybe	2010-2015
	- Allow SBR partners to assist in distribution of goods and services (see ECODIT’s SBR Marketing Plan)	2010-2015
	- Install an effective central reservation system	2010-2015

**Reference:**

Ecotourism Plan (for the Shouf Biosphere Reserve), 2010, Pascal Abdallah, Responsible Mobilities, Beirut, Lebanon

**Note:**

The recommendations of the Ecotourism Plan have been incorporated into the following Management Plan projects:

**Project 5** “Capacity Building” whose specific objective is to undertake a detailed assessment of the staffing requirements for the SBR and the capacity building needs of existing staff, local guides and volunteers.

**Project 6(a)** “Maasser Park House” whose specific objective is to equip and staff the new SBR headquarters in the village of Maasser el Shouf, that includes a visitor/information center, facilities for conferences and workshops, gift shop, and a small guesthouse for researchers and staff.

**Project 6(b)** “Niha Park House” whose specific objective is to establish a multi-purpose center for the SBR in the village of Niha to be used as a visitors and education centre, a focal point for conservation and research work, and support for rural development that benefits the local community

**Project 6(c)** “Ammiq Park House” whose specific objective is to establish a multi-purpose center for the SBR at the Ammiq Wetland in joint partnership with the “A Rocha” Association, to be used as a thematic visitors and education center on water and water ecology/management/conservation, and a focal point for conservation work and research in Ammiq.

### **4.3 INTEGRATED MONITORING PLAN**

The Integrated Monitoring Programme [IMP] in Al-Shouf Biosphere Reserve was formulated to pave the way for the implementation of successful adaptive management principles relying on developed tools such as a monitoring programme, plant diversity databases, spatial analysis models and vegetation maps. These tools will assist the management team in evaluating on-site status and ecological trends of the reserve.

The Shouf Biosphere Reserve's [SBR] IMP was developed to serve the objectives of the SBR management program. The program takes into account the effects of climate change on natural habitats as well as the mitigation measures they entail. Global climate is swiftly changing, with poorly known consequences for biodiversity and human well being. Existing climate models predict widespread and dramatic alterations in weather patterns over coming centuries, altering all nations and virtually every ecosystem. Climate change is likely to rise to the forefront of threats to biodiversity and endangered species.

Adaptive management is the process of gathering and using scientific information to evaluate and improve management decisions and practices on the ground. It is a planning process which includes identifying problems, scheduling reductions in the loadings of critical pollutants, establishing remedial and regulatory policies, and monitoring to determine the status of ecosystem impairments. These activities work together to focus on stressors to the ecosystem, resulting in a comprehensive approach toward environmental protection and natural resource management.

#### **FLORA**

The selection of the features and species to be monitored remains a challenge because baseline data has not been built up at the national level. No previous monitoring systems were in place that could be re-adapted or adjusted.

The IPM plan for flora includes survey forms to record the following:

1. Age structure and forest composition
2. Species richness
3. Selected species
4. Carrying capacity

The IPM plan also includes an annex that describes and illustrates IMP's selected plant species.

#### **Reference:**

Integrated Monitoring Plan (for the Shouf Biosphere Reserve), 2010, Elsa Sattout in collaboration with Mounir Bou Said, Riyad Sadek, Chris Naylor, and Nabil Nemer

## **BIRDS**

The selection of bird species for the IMP plan of the SBR was set on the basis of the policies and objectives of the management plan. It was done following a set of 11 criteria. The ideal selected species should abide by at least 3 of the 11 criteria:

Criteria 1 - easily identified by observer

Criteria 2 - found in the reserve frequently enough to make a monitoring program meaningful

Criteria 3 - easily visible

Criteria 4 - bio- indicator such as insect eaters indicating a healthy population of insect prey

Criteria 5 - linked to a particular habitat and dependent on the health of that habitat

Criteria 6 - target species for hunters

Criteria 7 - migrant breeders whose arrival date will be affected by global warming in long term

Criteria 8 - distributed in a specific altitudinal belt which will be affected by global warming

Criteria 9 - charismatic species for visitors

Criteria 10 - rare: Therefore important species for conservation in the reserve

Criteria 11 - introduced alien species

Four transects were defined to observe and record the selected birds for monitoring:

Survey 1: Transect Niha area to Nabi Ayoub

Survey 2: Transect Masser el Shouf

Survey 3: Fixed point Ain Legge

Survey 4: Transect from Ain Legge to the Reserve entrance

Steps, tips, and recording forms are provided to help those persons who monitor birds to unify their observations. The first annex provides “passport data” for ten birds selected as indicator species, and the second annex provides a useful “comparison” of birds that look similar to the indicator species (to avoid confusion during observation).

### Reference:

Integrated Monitoring Plan (for the Shouf Biosphere Reserve), 2010, Elsa Sattout in collaboration with Mounir Bou Said, Riyad Sadek, Chris Naylor, and Nabil Nemer

## **MAMMALS**

The criteria used for selection of species to be monitored are:

Criteria 1 - importance of the species on the national and international level

Criteria 2 - rare species or endangered species that needs conservation

Criteria 3 - species of economic importance to the wellbeing of the reserve

Criteria 4 - species that visitors can see during their visit.

Criteria 5 - species that is introduced or over populated in the reserve hence important to monitor

Criteria 6 - domestic species that have effect on the biodiversity of the reserve

Based on the above criteria 7 wild species and 2 domestic animals were selected:

- Hedgehogs [ *Erinaceus concolor* ]
- Wolf [ *Canis lupus pallipes* ]
- Red fox [ *Vulpus vulpus palaestina* ]
- Striped hyaena [ *Hyaena hyaena syriaca* ]
- Jungle cat [ *Felis chaus* ]

- Rock hyrax [*Procavia capensis syriaca*]
- Wild boar [*Sus scrofa lybicus*]
- Domestic dog [*Canis lupus familiaris*]
- Domestic cat [*Felis catus*]

The presence of two species of domestic animals in the reserve might affect its biodiversity. Domestic dogs will compete with other carnivores and they might cross breed with the wolves. Domestic cats may breed with wild cats resulting in a hybrid species. On the other hand, they might affect negatively the avifauna of the reserve. Accordingly, the presence of these two species should be monitored, their population number should be recorded, and when possible they should be removed from the reserve. These two species are not afraid of human hence their monitoring is much easier than wild animals. Whether driving a car or on foot the observer can record the presence of these animals, the site where they were seen, and their numbers (Form 1).

Monitoring should be conducted at the borders of the reserve with more focus on the Beqa'a borders, and should complete a full year cycle to have basic data on the presence of mammals, their population dynamic, and their behavior. It is recommended to implement the monitoring program for the mammals at least six times in a season, and a condensed monitoring for the rock hyrax on weekly basis. Different transects in the reserve must cover the diversity of habitats.

The walking transect length should not exceed 2 km with a minimum visibility of two meters.

Recommended location of some transects:

- Beside Ain Zhalta water reservoir
- Beside Al Barouk reservoir
- Beside Ain Legge
- On Kefrayya side

In addition to the walking transects, a driving transect is required using the main road as a fixed transects that could be used during the day or the night with the aid of spot light and recording the animals observed.

The Mammal section of the report also includes tables on all the above listed mammals that provide useful information such as Latin name, common name, description, illustration, monitoring methodology, and time for monitoring.

Reference:

Integrated Monitoring Plan (for the Shouf Biosphere Reserve), 2010, Elsa Sattout in collaboration with Mounir Bou Said, Riyad Sadek, Chris Naylor, and Nabil Nemer



## REPTILES & AMPHIBIANS

According to IUCN, Lebanon now contains around 7 threatened reptile species.

The reptile and amphibian species to be monitored were selected on the basis of being climate sensitive, endangered or endemic, and for their relative ease of detection or trapping. Annex 1 of this report includes an important selection amphibians & reptiles species.

The species selected for monitoring are the following:

- *Bufo bufo*
- *Cyrtopodian amictophole*
- *Lacerta kulzeri*
- *Platyceps najadum dahli*
- *Elaphe sauromates*

Monitoring in the Barouk and Niha regions is focused on zones within the reserve that are ecologically distinct and relevant to future climatic changes. These are:

1. Two zones below and above 1500m on the western slopes.
2. Two zones below and above 1500m on the eastern slopes.
3. Two forested zones: Ain Zhalta and Barouk.
4. Two “crest” zones, at the top of the mountain. One of these zones should be at the highest altitude (near transmitter antennas), the other further north (above Ain-Zhalta forest)
5. two sites in Niha region
6. Aquatic habitats in all zones which include the following: (a) Ain Legge, (b) “Japanese” pond near Ain Zhalta forest, (c) aquatic sites in Niha
7. Site "Niha 1" is outside the protected area. *Bufo bufo* is found and could monitor
8. Site “Niha 2” could be shifted to east or to north. Meant to be the highest point in the zone

### Monitoring Schedule

March – May: Conducting rounds in accessible areas for observing any mating activity by amphibians and the presence of eggs and tadpoles in aquatic habitats and snowmelt pools

April (1st Year): Devote monitoring to the installation of drift fence arrays, pitfall traps and cover boards

April (Subsequent Years): Check and maintain all the installed fences and traps so that they become ready for monitoring in the following 3 months.

May – August: Regular monitoring of traps and recording of data.

Late July – August: Particular attention to be given to emerging juveniles

Late September - October Monitoring of traps for amphibians with the early rains.

### Handling venomous snakes:

All the snakes that will be encountered during the monitoring program, except vipers, are not venomous. Handling some non-venomous snakes might involve violent defenses by the snakes. Some snakes might bite fiercely in self defense. Holding the head firmly but not too tightly might neutralize the snake's ability to bite. Some snakes might use excreta to repel handlers. The snake species that should be handled with caution are: *Vipera palaestina*, *Macrovipera lebetina* and *Malpolon mospessulanus*.

### Reference:

Integrated Monitoring Plan (for the Shouf Biosphere Reserve), 2010, Elsa Sattout in collaboration with Mounir Bou Said, Riyad Sadek, Chris Naylor, and Nabil Nemer

## INSECTS

Field surveys were launched in 2005 and terminated in 2008. The aim of the field studies was to ascertain the presence of the cedar sawfly [*Cephalcia tannourinensis*] in Al Shouf Cedar Nature Reserve. The field explorations revealed the presence and abundance of 5 insect species living on Lebanese cedar forest in Al Shouf Cedars Nature Reserve. The species identified are: [1] *Cephalcia tannourinensis*, [2] *Thaumetopoea libanotica*, [3] *Dichelia cedricola*, [4] *Dasineura cedri* and [5] *Ernobius libanensis*. The major defoliator of the cedar of Lebanon [*Cephalcia tannourinensis*], was not found during the 4-years surveys.

The species selected for monitoring are the following:

Cedar processionary moth [*Thaumetopoea libanotica*]

Pine processionary moth [*Thaumetopoea wilkinsoni*]

Cedar shoot moth [*Dichelia cedricola*]

Cedar cecidomyid [*Dasineura cedri*]

Cedar anobiid beetle [*Ernobius libanensis n. sp.*]

Detection will be carried out by placing 1 to 2 pheromone traps per forest.

Method 1: Place 1 or 2 Delta traps containing the pheromone capsule of the cedar shoot moth

[*Dichelia cedricola*] and the cedar processionary moth [*Thaumetopoea libanotica*] in cedar forest

Method 2: Place 1 capsule of pine processionary moth [*Thaumetopoea wilkinsoni*] in pine forest

Steps to be followed:

Step 1 Distribute Pheromone traps (a total of 10 Delta traps) randomly in the cedar forest to cover all directions and the center with a minimal distance of 50 m between traps

Step 2 Hang the Delta traps on the branches with a wire

Step 3 Record every week the number of trapped male insects caught on the pheromone taps

Step 4 Change the capsule every 30 days after its placement in the forest

Step 5 Renew the traps always after a cumulative catch of 70 adults

Sampling Strategy for the Transect Method

1 Setting up your transect. Set up a single line that can be 200 meters, 300 meters, 400 meters or 500 meters.

2 Where to place the transect. Locate your transect so that the area covered is as uniform as possible [the transect is not half in cedars and half in grass lands & physical environment- choose a consistent slope]

3 Marking out the transect. Better to adopt a 500 meter transect. Use flag tape to mark out the start and finish points and then five points 100 meters apart are marked out along the transect.

Point one is located 50 meters from the beginning and all other points are 100 meters apart

4 Sampling. Take sample and observe the summer's buds on 5 different trees near the sampling points (at 50, 150, 250, 350 and 450 meters).

## Reference:

Integrated Monitoring Plan (for the Shouf Biosphere Reserve), 2010, Elsa Sattout in collaboration with Mounir Bou Said, Riyad Sadek, Chris Naylor, and Nabil Nemer

**Note:**

The recommendations of the Integrated Monitoring Plan have been incorporated into the following Management Plan projects:

Project 2 “Biodiversity Conservation and Recovery Plan” whose specific objective is to assess gaps in existing knowledge, undertake research on biological diversity, and the state of ecosystem dynamics and integrity. This information will lead to the formulation of a SBR Conservation and Recovery Plan. Such a plan will become an important source of information for managers and will help to guide their future work.

Project 3 “Ecosystem Services and their Economic Value” whose specific objective is to carry out and publish an assessment and economic evaluation of the ecosystem services provided by the SBR, with a special focus on water, and raise the awareness of all Lebanese regarding the value of the Shouf as a provider of natural goods and services.

Project 4 “Forest Landscape Restoration” whose specific objective is to design and implement an innovative FLR program in a pilot site within SBR that produces tangible ecological and economic improvements to the entire landscape. The pilot project will also function as a model for future FLR work in SBR and beyond.

#### **4.4 THREAT REDUCTION ASSESSMENT (TRA)**

Monitoring progress in protected areas worldwide is considered a burden to management teams who are overwhelmed with security situations (wars, poaching, vandalism), protection of the resources from tourists, and general lack of human resources. These management teams acknowledge the importance of proper and regular monitoring in their protected area, but simply do not have the time or skills to undertake these studies, particularly when biological indicators, transect lines, and GIS are used.

Threats to protected areas are almost always mentioned in progress reports or applications for financial assistance. However, they are usually dealt with in qualitative terms that tend to mask their danger to the continued welfare of the area. The modified threat reduction assessment (TRA) described in Diane Matar's work (see References and Annex) focuses on the quantitative aspects of threat reduction, thereby making it a practical and innovative addition to the practice of monitoring in protected areas.

According to Richard Margoluis and Nick Salafsky "It is clear that our field faces a critical need for an independent measurement of conservation success. To address this need, we set out to develop an approach that would overcome some of these obstacles and provide a simple tool for conservation project managers to use in measuring the impacts of their efforts. The result of our work the 'Threat Reduction Assessment' approach is a measurement tool that provides useful information at an acceptable cost and complements biological indicator approaches to measuring project success".

Implementing the TRA approach and calculating a TRA Index involves 10 steps:

- Step 1 - Define the project area in space and time
- Step 2 - Develop a list of all direct threats
- Step 3 - Define the threats and what 100% reduction means for each
- Step 4 - Rank each threat for area
- Step 5 - Rank each threat for intensity
- Step 6 - Rank each threat for urgency
- Step 7 - Add up the ranking scores
- Step 8 - Determine the degree to which each threat has been reduced
- Step 9 - Calculate raw scores
- Step 10 - Calculate the TRA index

The TRA is most useful when Step 1 through Step 7 are done first at the start of the project. This creates a baseline dataset before the project begins.

There are several significant advantages to the TRA approach :

##### **1- The TRA approach can measure changes over short time periods**

For example, in a forest area under threat from selective logging, the TRA approach directly measures whether the logging is continuing or has been halted. The biological approach, however, is not useful in measuring changes over brief periods, especially in relation to naturally occurring fluctuations in populations of indicator species.

##### **2- The TRA approach can measure changes throughout the project site**

The TRA approach also reflects changes that occur throughout the project site. Biological indicators may focus on one part of a site and may, therefore, not reflect changes occurring in other parts. For example, a research plot left undisturbed would not reflect the impact of logging occurring in the forest just beyond the boundaries of the plot or throughout the forest. However, the TRA approach considers changes throughout the project site by addressing the area, intensity, and urgency of the threats.

### **3- The TRA approach can be used to compare different project sites**

The TRA approach can be used to create a standardized index that compares different project sites occurring in vastly different biological and socioeconomic contexts. In large part, this is because the TRA Index is “unit-less” in that it calculates the percentage of threat reduction at each site. It is generally more difficult to create unit-less and yet meaningful indices with biological data, especially across different ecosystem types.

### **4- The TRA approach can use both social and biological data collection methods**

Unlike the biological approach, which is restricted in the data it can use, the TRA approach can use data collected through biological techniques and/or social science techniques, such as key informant interviews and inspection of project records. Social research techniques tend to be less expensive and easier to use, especially because they are linked to the interventions being undertaken and can thus typically be done by project staff or community members.

### **5- The TRA approach produces results readily interpreted by staff & community members**

Data from the TRA approach can also be readily analyzed and interpreted by project staff and community members. In every case in which we have applied the TRA approach, the process of reviewing the project has catalyzed long and involved discussions among project members regarding both the impact of the project to date and adjustments that need to be made.

### **6- The TRA approach can be done retrospectively to assess projects in progress**

The TRA approach can be used to analyze ongoing projects. It is much easier to retrospectively “re-create” baseline data for threats than it is for land-use or populations of indicator species. This is often necessary as the vast majority of conservation projects are launched without collecting baseline data for use in evaluating future interventions.

### **Reference:**

Threat Reduction Assessment (for the Shouf Biosphere Reserve), 2010, Diane Matar

### **Note:**

The recommendations of the Threat Reduction Assessment have been incorporated into the following Management Plan projects:

**Project 1** “Demarcation of Boundaries of the Core Zone to Avoid Conflict” whose specific objective is to activate the inter-governmental panel on demarcation of public lands to deal with the critical issues of demarcation and preparation of necessary deeds; validate and locate private land claims; and commission the preparation of an authorized map of the SBR . The first step in implementing the TRA approach and calculating a TRA Index is to define the project area in space and time (this most basic requirement of any protected area has not been accomplished).

## **4.5 ASSESSMENT AND EVALUATION OF GRAZING ACTIVITIES AT THE SHOUF CEDAR NATURE RESERVE**

### **History of Grazing and Aim of the Project**

Historically, the rangelands of the reserve as well as the reserve itself was used to provide grazing for a large number of small ruminant flocks from the surrounding areas as well as from far away regions of Lebanon. Transhumant herds used to converge to the Reserve and its foothills during spring and summer. Besides other herders from the far east Beqa'a like Aarsal and west Beqa'a as well from the surrounding villages used to settle in the Reserve for the whole grazing season especially that the difference in the altitudes (low altitudes used in winter and high altitudes used in the summer) of the Reserve allow the shepherds to benefit from a long grazing period. A survey undertaken by Al-Shouf Cedar Society in 1997 identified 37 herds of sheep and goats for a total of 42,000 head grazing in the Barouk forest, the Maaser Al Shouf forest and the Bmohray-Ain Zhalta forest and its surrounding areas. After the establishment of the SCBR and due to the strict control by reserve rangers, the number of flocks has declined drastically and is now limited to herders from the adjacent villages. In the Niha forest and its surrounding used to be grazed by 30,000 heads owned by more than 30 shepherds from Niha, Mashghara and other surrounding villages.

It is worth mentioning the effect of livestock on the Reserve biodiversity. Livestock has a negative effect on the some flora of the Reserve; however they have also a positive effect through seed dispersal, fertilization, turning up the soil, fighting forest fires, decrease plant competition, and very importantly have a positive effect on the fauna (wolves and hyaenas) of the Reserve. Hence, the concept of establishing a sustainable strategy aiming at integrating the grazing activities of these herders into the overall management plan of the Reserve will ensure a sustainable context for the Reserve users, enhance the local value of the Reserve, fight forest fires, and enrich its biodiversity.

In the light of the above an assessment and evaluation of grazing activities was conducted in between July and December 2011 to maintain the balance between the nature reserve and the species-rich grassland around the reserve through assessing grazing activities, delineate rangelands that could be used for grazing, and establish a rotational grazing program.

### **Shepherds and SBR**

Conflicts between the Shouf Biosphere Reserve and the shepherds could be managed through a management plan that take into consideration the Reserve's well being and the shepherd's interests. Results show that the SBR hosts a large area of 12,400 ha of rangelands that can accommodate around 40,000 goats grazing for six month. However, in both areas all the shepherds own are around 12,500 goats. It is obvious that the carrying capacity exceeds the actual stocking rate and it is concluded that if the actual level of use is not increased the risks of overgrazing in the area will be very minimal. Besides the area could not be used for the whole year mainly due to weather conditions and the presence of alternative feed resources elsewhere such as the cultivated lands, harvested fields, and crop residues (vegetables, cereals...).

Rotation grazing can be easily applied which will benefit both the SBR and the shepherds and decrease the conflict between them. It will also encourage the shepherds to be more cooperative with the management team of the Reserve, more willing to protect it, and abide by the laws.

The rangelands were therefore divided into eight sites to make the application of rotational grazing easy to handle. Once there is an agreement between SBR, shepherds, and the municipality concerned a strategic grazing plan could be developed and implemented. However, the water availability will remain an issue.

Through group discussion and meetings with shepherds it was made clear that access to water was as important as feed. The Shouf shepherds justified their entry to the reserve on the basis of their need for water. They propose different approaches and options to get the water. These included water tanks or water reservoirs that could be situated at the borders of the grazing area where they can water their animals without having to walk a long distance or enter through restricted areas.

### **Recommendations**

- 1- Eight recognized sites on the two sides of the reserve, four on the Shouf side of the reserve and four on the Beqa'a side.
  - a. Use either deferred or deferred rotational grazing by using two sites on each side of the reserve each year while keeping the other two for the second year and the rotation continues
  - b. Or use rotation grazing of the four sites for a short period each year. Logistically and practically the first option is preferable for both the shepherds and the management of the reserve as the shepherds don't have to move often and for the rangers to have a better control
- 2- Always keep a buffer zone between the grazing area and the reserve of at least 200-300m
- 3- The protected areas of the reserve should be completely restricted to grazing.
- 4- Encouraging the shepherds to have mixed flocks of sheep and goats that has minimal effect on the reserve than if the same number of animals in the flock were goats only.
- 5- Provide water sources for the shepherds. Reservoirs, water catchments, or water tanks could be distributed at different location with an easy access for the shepherds and their animals
- 6- Mark the grazing site with highly visible signs. This will help the shepherds to confine themselves to the grazing area and not to access the restricted protected areas and it will enable rangers to follow up on any outbreaks in the grazing plan
- 7- Involve the shepherds, under the supervision of the management team, in reserve activities either through ecotourism or marketing of their products.
- 8- It is recommended that the SBR facilitate the communication and follow up between the shepherds and the Ministry of Agriculture
- 9- Provide occasional training and facilitate meetings among the shepherds themselves. This was one of the demands requested by the shepherds, to hold meetings under the umbrella of the SBR.
- 10- In kind incentives that SBR could provide to the shepherds either through donors or MoA that will improve the relation among both parties and give the SBR a leading role
- 11- The ranger or the forest guards should be responsible for monitoring the activities of the shepherds in the area. Increasing the incentives to the rangers will help in enforcing the law and better monitoring of the grazing areas.

**Reference:**

The Grazing Plan was prepared by Dr. Mounir R. Abi-Said

**Note:**

The recommendations of the Grazing plan have been incorporated into the following Management Plan projects:

**Project 1** “Demarcation of Boundaries of the Core Zone to Avoid Conflict” whose specific objective is to activate the inter-governmental panel on demarcation of public lands to deal with the critical issues of demarcation and preparation of necessary deeds; validate and locate private land claims; and commission the preparation of an authorized map of the SBR.

**Project 7(a)** “Products from the Land of Cedars” whose specific objective is to support handicraft production and sale in the SBR by carrying out a quantitative and qualitative inventory of available and potential handicraft products and evaluating best opportunities for new production chains.

**Project 8** “Small Grants Program” whose specific objective is to support and encourage grassroots businesses by setting up a small grants scheme available to local actors, aimed at supporting innovative sustainable business, mainly in the areas of tourism, handicrafts, and agriculture/natural products.



## CHAPTER 5. VISION AND OBJECTIVES

### 5.1 Vision

**A world class Biosphere Reserve where natural and cultural heritage are conserved, resources are treated as wealth, investment receives due care, and development is controlled by citizens, businesses, and the managing authority.**

**For the vision to become a reality the SBR needs to be:**

- ✓ Recognized for the uniqueness of its natural and cultural heritage - wherein it is treated as a valuable source of wealth, and a capital that should be conserved at all cost
- ✓ Promoted as a reference for nature conservation and sustainable development in the region because of its innovative conservation and development work
- ✓ Understood by widest possible audience as a living example of economic development and nature conservation working together
- ✓ Developed as a model of the “*mosaic factor*” that brings together multiple small-scale businesses and services all of whom benefit from local resources in an integrated fashion
- ✓ Encouraged to identify the competitive advantage it possesses over similar landscapes in the Middle East/Eastern Mediterranean to develop its economic potential utilizing the most appropriate communications and marketing strategies
- ✓ Reminded to take full advantage of the opportunities offered by the international donor community, in addition to assisting local actors to make effective use of such support

**The 2012 - 2017 Management Plan of the SBR is focused on:**

- **1 vision** to unify the SBR’s aspirations
- **4 objectives** to guide the SBR in the upcoming five years
- **10 constraints** that could prevent the implementation of the objectives
- **10 projects** that would promote the implementation of the objectives
- **5 year timeline** for realizing the projects

## 5.2 Objectives

### 5.2.1 First Objective

#### **Conserve and restore biological diversity, ecological integrity, and ecosystem services through high-profile, science-based research and fieldwork**

The natural and cultural heritage of the SBR is a unique capital that Lebanon must conserve for the benefit of its own people, and the global community. The first objective falls under the broad theme of “Taking care of the capital”

### 5.2.2 Second Objective

#### **Enhance the effectiveness of the management team by providing the facilities, capacity, tools, and resources needed to manage a large area**

The management team consists of the men and women whose daily job is the custody of the capital, and includes professionals and external supporters involved in the management of the SBR. The second objective falls under the broad theme of “empowering the management team”

### 5.2.3 Third Objective

#### **Support rural entrepreneurs and the weakest sectors of village society (women, youth, unemployed) by boosting sustainable business practices and facilities that are linked to tourism, agriculture, and traditional products**

The shareholders are the people who take advantage of the capital and whose livelihoods depend on its integrity and productivity, and includes the inhabitants of the 24 villages located around the SBR. The third objective falls under the broad theme of “supporting the shareholders”

### 5.2.4 Fourth Objective

#### **Boost the image of the SBR at the national and global level and position it as a leading destination for tourism, a showcase for nature conservation, and an example of ecosystem-based adaptation to climate change in the region**

The SBR has the potential to become a world-class protected area, but few people in Lebanon are fully aware of all its treasures, and even fewer know it outside the country. The fourth objective falls under the broad theme of “putting the Shouf on the global map”

## CHAPTER 6. CONSTRAINTS

### 6.1 Constraints that hinder the first objective “Conserve and restore biological diversity, ecological integrity, and ecosystem services through high-profile, science-based research and fieldwork”

#### Constraint 1

##### *Poorly marked SBR boundaries resulting in potential conflict with private landowners*

##### Causes

- 1) the SBR boundaries have never been demarcated on the ground despite repeated requests since the establishment of the Al-Shouf Cedar Nature Reserve in July 1996
- 2) the inter-governmental panel on demarcation of public lands was not activated to deal with the critical issues of demarcation and preparation of necessary deeds
- 3) validity and location of private land claims have not been examined nor authenticated
- 4) authorized map of the SBR does not exist

#### Constraint 2

##### *Limited funding available for biodiversity and conservation work in the SBR*

##### Causes

- 1) program development and fundraising for biodiversity oriented projects require more time and focus than the Management Team is able to provide
- 2) action plan for the conservation and restoration of biodiversity in the reserve is not developed
- 3) projects from the objectives of the SBR Management Plan that deal with biodiversity and conservation need regular updating
- 4) inspiration from positive experiences in biodiversity and conservation work from other countries is needed

#### Constraint 3

##### *Insufficient knowledge of ecological processes and ecosystem services*

##### Causes

- 1) reliable and updated data on ecological processes and ecosystem services are not available
- 2) an action plan for biodiversity and ecosystem conservation is not sufficiently developed
- 3) Lebanese research institutions are not involved in the measurement of ecosystem services
- 4) international donors are not usually involved in funding ecosystem services

#### **Constraint 4**

#### ***Forest fires that threaten the mountain ecosystem and degraded land that is prone to desertification***

##### **Causes**

- 1) a comprehensive forest fire fighting strategy has been developed but not implemented
- 2) infrastructure for fire fighting needs to be upgraded and equipment/materials purchased
- 3) burnt areas need to be replanted with appropriate (indigenous) types of trees
- 4) fire fighting teams and volunteers need more capacity building
- 5) awareness campaigns in the form of brochures and school presentations are lacking
- 6) modern concepts of Forest Landscape Restoration (FLR) have not been introduced to SBR
- 7) insufficient interest and local capacity to restore and benefit from degraded land
- 8) demonstration pilot projects on upgrading degraded land are absent

#### **6.2 Constraints that hinder the second objective “Enhance the effectiveness of the Management Team by providing the facilities, capacity, tools, and resources needed to manage a large area”**

#### **Constraint 5**

#### ***Poorly defined governance structure, insufficient core staff, and gaps in staff capacity***

##### **Causes**

- 1) general framework law for PAs in Lebanon (SISPAM) has not been fully implemented
- 2) responsibilities and relationships are unclear between the MOE, APAC, and ACS
- 3) governance chart and TORs for institutions involved in management of SBR are not clear
- 4) monitoring/evaluation system to assess management efficiency of the SBR are not available
- 5) recent assessment of core staff needs and qualifications determined the need for twice as many permanent staff (26 permanent and 10 temporary staff )
- 6) funds for permanent staff from the MOE budget are not sufficient
- 7) capacity building plan for senior SBR staff in development and fundraising is not sufficient

#### **Constraint 6**

#### ***Lack of facilities for visitors, staff, and researchers***

##### **Causes**

- 1) increasing demands by visitors and staff require new headquarters for the SBR in the central region (Maasser) of the reserve that includes a visitor center/workshop facilities/gift shop/etc
- 2) the SBR has no center in the southern region (Niha) to promote conservation & development
- 3) a thematic center for the SBR at the Ammiq Wetland to promote water ecology / management / conservation is required considering the topical issues of climate change and desertification

**6.3 Constraints that hinder the third objective “Support rural entrepreneurs and the weakest sectors of village society (women, youth, unemployed) by boosting sustainable business practices and facilities that are linked to tourism, agriculture, and traditional products”**

**Constraint 7**

***Increasing poverty among the weakest individuals in the rural community***

**Causes**

- 1) degradation and downsizing of the traditional/rural economy where the weakest individuals (such as farmers, women, youth, handicapped, etc) are most at risk
- 2) a comprehensive poverty reduction strategy that supports the most viable segments of the local economy (women and farmers) is absent
- 3) a marketing and communications strategy with accompanying project portfolio to submit to local and international donors has not been prepared

**Constraint 8**

***Local communities are not benefitting from modern production and marketing techniques***

**Causes**

- 1) current marketing and business plans for rural products are out of date
- 2) rural products need new design, attractive packaging, marketing channels, and exhibits
- 3) more women need to be trained and equipped to produce traditional foods and crafts
- 4) certification and labeling are missing from current products

**6.4 Constraints that hinder the fourth objective “Boost the image of the SBR at the national and global level and position it as a leading destination for tourism, a showcase for nature conservation, and an example of ecosystem-based adaptation to climate change in the region”**

**Constraint 9**

***Ecotourism does not focus on priority issues***

**Causes**

- 1) tourism capacity, infrastructure, and services need continuous upgrading, and are not sufficiently developed to benefit the weakest segments of local society
- 2) partnership with the private sector including eco-tour operators and marketing companies are not well established and need to be strengthened
- 3) the absence of an updated Ecotourism Strategy is one of the reasons that the SBR fails to attract a steady flow of tourists from the Arab region and around the world
- 4) SBR management team, local guides and community members need tourism capacity building
- 5) the existing tourism infrastructure lacks international certification and labeling

**Constraint 10**

***No plans for adaptation/mitigation of adverse effects of climate change***

**Causes**

- 1) despite extensive media coverage of “climate change” and “global warming”, the impact of such global changes on the local scene is still unclear
- 2) programs that focus on the effects of climate change on the livelihoods of local communities, are lacking
- 3) the collaboration of donors and educational/international institutions are required to arrange meetings and assist in the preparation and distribution of printed materials and CDs on the latest information regarding climate change

## **CHAPTER 7. IMPLEMENTATION OF THE MANAGEMENT PLAN**

### **7.1 Management Strategies**

In order to overcome the constraints listed in Chapter 6, the SBR Management Team with the political, financial, and technical help of the MOE, APAC, ACS, stakeholders, NGOs, and municipalities will have to resolve the causes of these constraints.

The following are the management strategies (basically a list of priority actions) that will constitute the first step in the implementation of the SBR Management Plan 2010-2015.

#### **Strategies pertaining to Constraint 1: “Poorly marked SBR boundaries resulting in potential conflict with private landowners”**

- 1) Demarcate the boundaries of the core zone(s) of the SBR by activating the inter-governmental panel on demarcation of public lands
- 2) Prepare the necessary legal deeds of the lands that constitute the core zone of the SBR
- 3) Locate, examine, and validate claims of private land ownership in the core zone of the SBR
- 4) Authorize an official map of the SBR

#### **Strategies pertaining to Constraint 2: “Limited funding available for biodiversity and conservation work in the SBR”**

- 1) Raise funds for biodiversity oriented projects
- 2) Develop an action plan for the conservation and restoration of biodiversity in the SBR
- 3) Emulate positive experiences in biodiversity and conservation work from other countries

#### **Strategies pertaining to Constraint 3: “Insufficient knowledge of ecological processes and ecosystem services”**

- 1) Update data on ecological processes and ecosystem services
- 2) Develop an action plan for the conservation and restoration of biodiversity in the SBR
- 3) Involve Lebanese research institutions in the measurement of ecosystem services
- 4) Encourage international donors to become involved in funding ecosystem services

#### **Strategies pertaining to Constraint 4: “Forest fires that threaten the mountain ecosystem and degraded land that is prone to desertification”**

- 1) Implement the comprehensive forest fire fighting strategy developed
- 2) Upgrade infrastructure for fire fighting and purchase equipment/materials needed
- 3) Replant burnt areas with appropriate (indigenous) types of trees
- 4) Train more fire fighting teams and volunteers
- 5) Develop awareness campaigns in the form of brochures and school presentations
- 6) Introduce modern concepts of Forest Landscape Restoration (FLR) to the SBR
- 7) Initiate a demonstration pilot project on upgrading degraded land in/around the SBR

**Strategies pertaining to Constraint 5: “Poorly defined governance structure, insufficient core staff, and gaps in staff capacity”**

- 1) Implement the general framework law for PAs in Lebanon (SISPAM)
- 2) Clarify responsibilities and relationships between the MOE, APAC, and ACS
- 3) Review governance chart and TORs for institutions involved in management of SBR
- 4) Adopt simplified monitoring/evaluation system to assess management efficiency of the SBR
- 5) Employ twice as many staff (26 permanent and 10 temporary staff ) in the SBR
- 6) Increase funds for the 26 permanent staff from the MOE budget
- 7) Initiate capacity building plan for senior SBR staff in development and fundraising

**Strategies pertaining to Constraint 6: “Lack of facilities for visitors, staff, and researchers”**

- 1) Finish and operate new headquarters for the SBR in the central region (Maasser) of the SBR that includes a visitor center/workshop facilities/gift shop/etc
- 2) Develop a center in the southern region (Niha) to promote conservation and development
- 3) Build a thematic center for the SBR at the Ammiq Wetland to promote water ecology / management / conservation to highlight the topical issues of climate change and desertification

**Strategies pertaining to Constraint 7: “Increasing poverty among the weakest individuals in the rural community”**

- 1) Develop a comprehensive poverty reduction strategy that supports the most viable segments of the local economy (women and farmers)
- 2) Prepare a marketing and communications strategy with accompanying project portfolio to submit to local and international donors

**Strategies pertaining to constraint 8: “Local communities are not benefitting from modern production and marketing techniques”**

- 1) Develop new design, attractive packaging, marketing channels, and exhibits for new products
- 2) Train and equip more women to produce traditional foods and crafts
- 3) Certify and label all current products

**Strategies pertaining to Constraint 9: “Ecotourism does not focus on priority issues”**

- 1) Strengthen partnership with the private sector eco-tour operators and marketing companies
- 2) Implement the new Ecotourism Plan to attract tourists from the Arab region and the world
- 3) Build tourism capacity in the SBR management team, local guides and members of the local community
- 4) Strive for and obtain international certification and labeling for the existing tourism infrastructure



### **Strategies pertaining to Constraint 10: “No plans for adaptation/mitigation of adverse effects of climate change”**

- 1) Initiate media coverage of “climate change” and “global warming” as they impact the local scene in the SBR
- 2) Focus on the effects of climate change on the livelihoods of local communities
- 3) Prepare and distribute printed materials and CDs on the latest information regarding climate change, in particular as it pertains to the SBR

## **7.2 Zoning Requirements**

Biosphere reserves should contain one or more core zones, buffer zones, and a transition zone to accommodate their multiple functions. These zones or areas serve three primary objectives:

- 1) conservation - of landscapes, ecosystems, species and genetic variation
- 2) development – provided it is sustainable socially and economically
- 3) logistic support - for demonstration projects, education, research and monitoring.

### **7.2.1 Core Zone**

**The core zone of the SBR is about 161 sq km. The main conservation objectives of the core zone are the protection and rehabilitation of the SBR’s natural and cultural values.**

In addition to its conservation function, the core zone contributes to a range of ecosystem services which can be calculated in economic terms (e.g. carbon sequestration, soil stabilization, supply of clean water and air, etc.). The core zone also contributes to employment opportunities that complement conservation goals (e.g. environmental education, research, environmental rehabilitation and conservation measures, recreation and eco-tourism).

The main core zones in the SBR are the three separate cedar forests of Maasir Shouf, Barouk, and Ain Zhalta/Bmohray situated on the upper elevations of the reserve. Secondary core zones are found on the Niha mountain, with only scattered patches of cedar trees, that represent the natural southern limit of Lebanese Cedar (*Cedrus libani*). Since the establishment of these core zones in 1996 the vegetation has recovered dramatically, particularly the natural regeneration of cedars and oaks.

### **7.2.2 Buffer Zone**

**The buffer zone of the SBR is about 54 sq km. It surrounds the core zone(s) where only activities compatible with the conservation objectives can take place.**

Special attention should be given to the buffer zones. Their role is to minimize external and/or negative effects from human-induced activities on the core zones. In addition to the buffering function related to the core zone, buffer zones can have their own intrinsic, ‘stand alone’ functions for maintaining anthropogenic, biological and cultural diversity.

Buffer zones can also have an important connectivity function in a larger spatial context because they connect biodiversity components within core zones with those in transition zones.

Law No. 532 of 24 July 1996 designates a buffer zone of 500 meters directly surrounding the core zone where no tree cutting, uncontrolled grazing, major construction, quarrying, burning or hunting are allowed. Aside from the public road from Mukhtara to Kefraya that passes through the core area, and a military post and TV relay stations at the top of the mountain, there are no activities currently taking place in the buffer zone of the SBR.

Since the establishment of Al-Shouf Cedar Nature Reserve in 1996 the destructive practice of over-grazing was stopped, and controlled grazing was gradually introduced to allow herders from adjacent villages to use buffer areas for grazing. This created a working partnership between the Reserve and the herders and minimized the risk of forest fires.

### **7.2.3 Transition Zone (Development Zone)**

**The outer transition zone of the SBR is about 233 sq km. It includes all the villages surrounding the SBR where sustainable resource management practices are promoted.**

People live, and make a living, in transition zones which are characterized by multiple land uses. The transition zone of the SBR plays an important central function in the socio-economic development of the region.

The establishment of the SBR has given a powerful impetus to 22 municipalities in the Shouf and West Bekaa regions to take advantage of the natural resources of the region and to attract tourists to the area. They have come to appreciate the advantages of attracting tourists whether to buy their agricultural produce, or their particularly fine wines. The municipalities also want tourists to spend more time, overnight if possible, thereby increasing the income of local communities.

In the past, a shortcoming of the transition area was that its outer boundary was not required to be delineated or spatially-defined. But the establishment of cooperation plans and concepts, and fostering committed citizenship, need clear boundaries that are easy to accept and to understand.

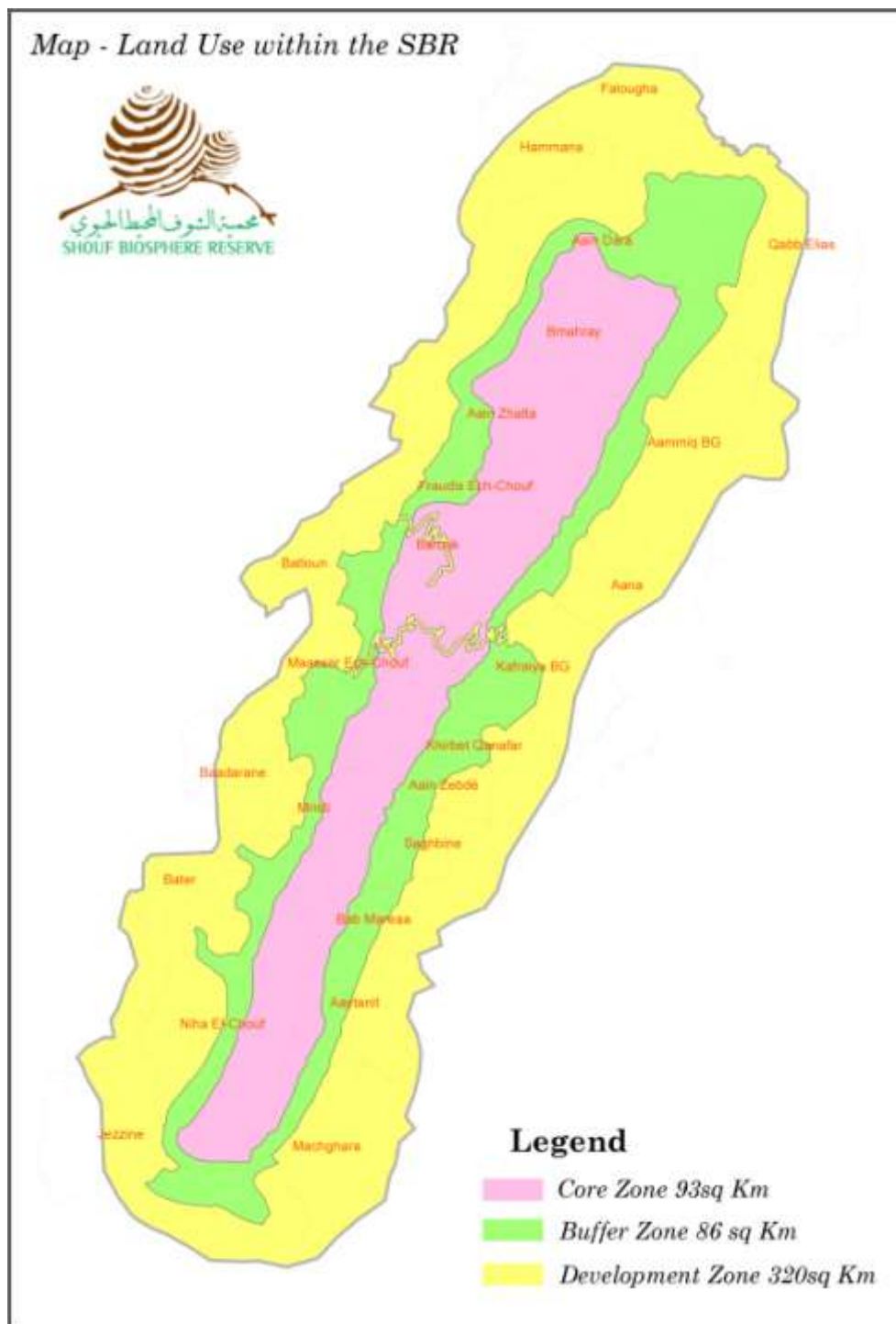
Cooperation, however, can extend beyond the boundaries of the transition zone, for sharing best practices, solutions and approaches with the wider region, thus fulfilling the role of biosphere reserves as learning sites for regional sustainable development.

In facing the new challenge of “climate change” it is important to note that the transition zone, in addition to its development function, can also serve conservation/environmental goals that mitigate the adverse effects of a changing global climate.

**7.2.4 Table: Activities and rules of conduct in each zone**

ZONE / FUNCTION	RULES OF CONDUCT
<p style="text-align: center;"><b>CORE ZONE</b></p> <p><b>The core zone of the SBR is about 94 sq km for the protection and rehabilitation of natural and cultural values, building community support, encouraging education and research, promoting ecotourism, and developing long term financial sustainability</b></p>	<p><b>Permitted</b></p> <ul style="list-style-type: none"> <li>• Environmental education</li> <li>• Scientific research</li> <li>• Ecosystem rehabilitation</li> <li>• Ecosystem services (carbon sequestration, soil stabilization, supply of clean water and air, etc.)</li> <li>• Limited guided eco-tourism</li> </ul> <p><b>Prohibited</b></p> <ul style="list-style-type: none"> <li>• Hunting</li> <li>• Grazing</li> <li>• Tree cutting</li> <li>• New asphalt roads</li> <li>• Buildings and facilities</li> <li>• Unlimited or unguided tourism</li> <li>• Picnic areas and food stalls</li> <li>• Pollution/garbage of all kinds</li> </ul>
<p style="text-align: center;"><b>BUFFER ZONE</b></p> <p><b>The buffer zone of the SBR is about 86 sq km and surrounds the core area(s), where only activities compatible with the conservation objectives can take place</b></p>	<p><b>Permitted</b></p> <ul style="list-style-type: none"> <li>• Ecotourism</li> <li>• Agriculture</li> <li>• Controlled grazing</li> <li>• Picnic areas and food stalls</li> <li>• Recreational land-uses</li> </ul> <p><b>Prohibited</b></p> <ul style="list-style-type: none"> <li>• Major construction activities</li> <li>• Major industrial activities</li> <li>• Uncontrolled grazing</li> <li>• Hunting and tree cutting</li> <li>• Pollution/garbage of all kinds</li> </ul>
<p style="text-align: center;"><b>TRANSITION ZONE</b></p> <p><b>The outer transition zone of the SBR is about 320 sq km where all the villages surrounding the reserve are located and sustainable resource management practices are promoted</b></p>	<p><b>Permitted</b></p> <ul style="list-style-type: none"> <li>• Construction activities permitted by law</li> <li>• Industrial activities permitted by law</li> <li>• Agricultural activities with minimal pesticides</li> <li>• Restaurants and guesthouses for ecotourism</li> <li>• Picnic areas and food stalls</li> </ul> <p><b>Prohibited</b></p> <ul style="list-style-type: none"> <li>• Activities that contribute to climate change</li> <li>• Pollution/garbage of all kinds</li> </ul>

## 7.2.5 Map: Land-use within the SBR



## 7.3 Projects for Implementation

### 7.3.1 Projects that promote the first objective “Conserve and restore biological diversity, ecological integrity, and ecosystem services through high-profile, science-based research and fieldwork”

#### PROJECT 1

##### **Demarcation of the Boundaries of the Core Zone of the SBR to Avoid Conflict**

**Background:** The SBR boundaries have never been demarcated on the ground since the establishment of the Al-Shouf Cedar Nature Reserve in July 1996. Such a situation will lead to conflict with private land owners within the core zone of the SBR.

**Specific objective:** To activate the inter-governmental panel on demarcation of public lands to deal with the critical issues of demarcation and preparation of necessary deeds; validate and locate private land claims; and commission the preparation of an authorized map of the SBR

**Project partners:** Ministry of Agriculture (MOA), Ministry of Environment (MOE), Ministry of Finance (MOF), Ministry of Interior and Municipalities (MOI), and the Lebanese Army

**Implementing team:** The inter-governmental panel on demarcation of public lands under the guidance of MOA, MOE, MOF, MOI, Lebanese Army, and SBR

**Approximate duration:** 36 months

**Indicative budget:** 250,000 EURO

#### **Output 1: Complete demarcation of the boundaries of the core zone in the SBR**

Actions:

- ✓ Contact the inter-governmental panel on demarcation of public lands
- ✓ Commence on the ground work on demarcating the core zone of the SBR

Indicators:

- ✓ An activated inter-governmental panel on demarcation of public lands
- ✓ Number of land surveyors involved

Assumptions:

- ✓ The demarcation project is able to find capable surveyors and to secure their services
- ✓ The SBR team provides adequate backup and guidance to the surveyors

**Output 2: Validity and location of private land claims within the core zone of the SBR are examined and authenticated**

Actions:

- ✓ All private landowners, religious “awkaif”, and public entities with claims to property within the core zone of the SBR should present their deeds of ownership to the inter-governmental panel

Indicators:

- ✓ Number of applications received by the inter-governmental panel to examine authenticity of land claims within the core zone

Assumptions:

- ✓ Willingness of inter-governmental panel and other government institutions to follow up on claims of ownership within the core zone

**Output 3: Updated legal land deeds for all parties (public and private) prepared**

Actions:

- ✓ Provide updated land deeds for those individuals or entities that have valid claims to land within the core zone of the SBR

Indicators:

- ✓ Number of updated deeds that are issued

Assumptions:

- ✓ Private land owners are prepared to cooperate with the authorities

**Output 4: Authorized map of the SBR is commissioned and executed**

Actions:

- ✓ Prepare an authorized map of the core and buffer areas of the SBR in cooperation with the Directorate of Geographic Affairs in the Lebanese Army

Indicators:

- ✓ Quantity and quality of surveying data from core zone of the SBR are available

Assumptions:

- ✓ Willingness of all parties to cooperate with the map makers so they can accomplish their task properly

## PROJECT 2

### Biodiversity Conservation and Recovery Plan

**Background:** The SBR suffers from a lack of reliable, updated quantitative and qualitative data on certain aspects of its biological diversity and the state of its ecosystem.

**Specific objective:** To assess gaps in existing knowledge, undertake research on biological diversity, and the state of ecosystem dynamics and integrity. This information will lead to the formulation of a SBR Conservation and Recovery Plan. Such a plan will become an important source of information for managers and will help to guide their future work.

**Project partners:** Lebanese and foreign universities, IUCN, local stakeholders

**Implementing team:** SBR in collaboration with MOE

**Approximate duration:** 24 months

**Indicative budget (EURO):**

Staff costs	12,000
Consultancy fees	28,000
Travel	10,000
Materials and publications	10,000

**TOTAL**

**60,000**

**Output 1: Updated quantitative/qualitative data on biological diversity in the SBR based on the Integrated Monitoring Programme [IMP\*] developed for the SBR to pave the way for the implementation of a successful adaptive management programme**

**Actions:**

- ✓ Gather and use scientific information to evaluate and improve management decisions and practices on the ground
- ✓ Identify problems, schedule reductions of critical pollutants, establish remedial and regulatory policies, and monitor the status of ecosystem impairments
- ✓ Contact Lebanese and foreign experts, set up research team, and commence work
- ✓ Production of project report and its presentation/circulation among all stakeholders

**Indicators:**

- ✓ Increased quantity and quality of data and biodiversity studies available
- ✓ Number of experts involved in the research study

**Assumptions:**

- ✓ The project is able to find adequate local and foreign experts and to secure their services
- ✓ The SBR team provides adequate backup and guidance to experts

\*The Shouf Biosphere Reserve's [SBR] IMP was developed to serve the objectives of the SBR management program. The program takes into account the effects of climate change on natural

habitats as well as the mitigation measures they entail.

### **Output 2: Research on ecological integrity and ecological processes in the SBR**

Actions:

- ✓ Contact Lebanese and foreign experts, set up research team, and commence work
- ✓ Production of project report and its presentation/circulation among all stakeholders

Indicators:

- ✓ Increased quantity/quality of data and research studies available on ecological processes
- ✓ Number of experts involved in the research studies

Assumptions:

- ✓ The project is able to find adequate local and foreign experts and to secure their services
- ✓ The SBR team provides adequate backup and guidance to experts

### **Output 3: Biodiversity conservation and recovery plan for the SBR**

Actions:

- ✓ Sectoral studies are merged and translated into an overall draft plan
- ✓ Organization of workshops for stakeholders for feedback and validation
- ✓ Biodiversity conservation and recovery plan produced and published

Indicators:

- ✓ Number of stakeholders involved and feedback received
- ✓ Biodiversity conservation and recovery plan available
- ✓ Plan endorsed by MOE and main stakeholders

Assumptions:

- ✓ The quantity/quality of reports allows production of good comprehensive final report
- ✓ The SBR team is able to secure the cooperation of critical number of stakeholders



## PROJECT 3

### Ecosystem Services and their Economic Value

**Background:** The assessment and economic evaluation of ecosystem services is a new discipline that has not yet been implemented in Lebanon. Through this project, the SBR will seek the input of qualified experts to undertake a global assessment of the services provided by the SBR, with a special focus on water (water cycle, water supply, economic evaluation etc.) This work will increase the awareness of all Lebanese regarding the importance and economic value of the SBR.

**Specific objective:** To carry out and publish an assessment and economic evaluation of the ecosystem services provided by the SBR, with a special focus on water, and raise the awareness of all Lebanese regarding the value of the Shouf as a provider of natural goods and services.

**Project partners:** IUCN, local stakeholders

**Implementing team:** SBR in collaboration with MOE

**Approximate duration:** 12 months

**Indicative budget (EURO):**

Consultancy fees	25,000
Travel	10,000
Materials and publications	10,000

**TOTAL**

**45,000**

#### **Output 1: Scientific assessment and economic evaluation of the ecosystem services provided by the SBR, with a special focus on water cycle and water supply**

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**Actions:**

- ✓ Prepare TOR for study and hire international expert/s
- ✓ Research, field work, and interview with stakeholders
- ✓ Production, adoption, and publication of report
- ✓ Press release and presentation of the report to Lebanese public, media, and decision makers

**Indicators:**

- ✓ Reliability of scientific assessment and economic evaluation of the ecosystem services
- ✓ Number of articles, TV programs, etc. generated by the findings of the report
- ✓ Feedback received from stakeholders

**Assumptions:**

- ✓ The project is able to find qualified expert/s to evaluate the ecosystem services
- ✓ The SBR team provides adequate backup and guidance to expert/s

## PROJECT 4

### Forest Landscape Restoration (FLR)

**Background:** The SBR hosts an impressive diversity of habitat types, as well as a number of endemic plants. The impact of intense human pressures (illegal hunting, overgrazing, over-harvesting of wood/plants, and uncontrolled fires) has resulted in a degraded forest landscape with fragmented and relic forest stands. The trend in global warming/climate change is expected to increase the frequency/intensity of forest fires that are a direct threat to the forest ecosystem.

The aim of this project is to develop and implement a comprehensive large-scale restoration plan to regain the ecological integrity and improve the environmental services provided by forest ecosystems in the SBR. The major goals of this project are to build ecological and social resilience against major disturbances like forest fires, support local livelihoods through economic opportunities, and improve biodiversity conservation.

**Specific objective:** To design and implement an innovative FLR program in a pilot site within SBR that produces tangible ecological and economic improvements to the entire landscape. The pilot project will also function as a model for future FLR work in SBR and beyond.

**Project partners:** Lebanese and foreign research institutions, government ministries, IUCN, local stakeholders (municipalities, local community groups, SBR managers, forest rangers)

**Implementing team:** SBR in collaboration with MOE and MOA

**Approximate duration:** 5 years

**Indicative budget (EURO):**

Staff costs (Coordinator: 20,000/yr + 2 Field Assistants: 12,000/yr x 2)	220,000
Consultancy fees	150,000
Travel	100,000
Field costs (equipment, seed grants, plantation work)	300,000
Training courses and exchanges (15,000 course/exchange x 3 themes x 2)	90,000
Workshops and meetings	75,000
Publications and awareness materials	60,000

**TOTAL** **775,000**

#### Output 1: Assessment of conservation status, causes of degradation, and restoration needs of forest ecosystems in SBR

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Actions:

- ✓ Set up team of experts for gathering field data
- ✓ Undertake field research work
- ✓ GIS mapping of field data and identification of high risk areas that are priority for restoration work
- ✓ Database of restoration needs and opportunities for land uses/forest types in the SBR

Indicators:

- ✓ Number of experts and research plan
- ✓ Quality of research studies
- ✓ Set of GIS maps with field assessments results
- ✓ Database and reports available

Assumptions:

- ✓ The project is able to involve local and foreign experts and to secure their services
- ✓ Security conditions allow undertaking field work
- ✓ Local experts provide adequate backup and guidance to foreign experts

**Output 2: Participatory planning process on land uses and their spatial distribution (“fire-smart landscape”) in the SBR**

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Actions:

- ✓ Develop a stakeholder analysis of land users/owners in the SBR
- ✓ Develop an awareness raising plan with ad hoc activities/materials on FLR and resilient land uses addressing the different stakeholder groups
- ✓ Organize a participatory process with representatives of relevant stakeholders to identify and agree on resilient land uses and their spatial distribution needs in high risk areas
- ✓ Identify and agree on compensation needs and incentives for land users/owners of high risk areas
- ✓ Develop and implement a capacity building plan to facilitate the adoption of new and/or improved management practices

Indicators:

- ✓ Stakeholder analysis report
- ✓ Number of awareness materials prepared
- ✓ Number of people involved in awareness raising actions
- ✓ Minutes of participatory meetings with the list of participants
- ✓ Report with agreed list of compensation and incentives
- ✓ Number of courses completed and their evaluation reports
- ✓ Number of people trained

Assumptions:

- ✓ All concerned stakeholder groups are willing to participate in the process
- ✓ Lebanese administration in charge of spatial planning willing to participate in the process
- ✓ Spatial planning for the SBR territorial unit is agreed by the governmental authorities and does not clash with other spatial planning processes/territorial divisions

### **Output 3: Develop and implement a Forest Landscape Restoration (FLR) plan to convert the SBR into a “fire-smart landscape”**

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#### Actions:

- ✓ Identify restoration goals for the different landscape components (natural ecosystems/land uses) that pertain to ecological, social and cultural values
- ✓ Identify priority areas (i.e. high risk areas) for restoration interventions
- ✓ Select a number of representative sites in need of restoration and develop restoration protocols combining three goals: restore biodiversity, reduce vulnerability against major disturbances, and create conditions for resilient land uses
- ✓ Select biotic material which better respond to the restoration goals and identify adequate techniques to obtain/produce it
- ✓ Appoint restoration coordinator and restoration team for the implementation of field work
- ✓ Plan local participation and legal requirements (permits required, specifications, agreements, liaisons with public agencies, etc)
- ✓ Identify labor sources, biotic resources and equipment needs
- ✓ Gather baseline ecological information (pre-restoration) in all pilot sites
- ✓ Engage and train all personnel who will conduct restoration actions (restoration team, local residents and other interested actors)
- ✓ Implement passive and active restoration actions in all pilot sites
- ✓ Organize public awareness actions linked to annual field restoration work and international days (i.e. the tree day) in the pilot restoration sites
- ✓ Develop and implement a monitoring plan to assess effectiveness of restoration actions

#### Indicators:

- ✓ Report with restoration goals
- ✓ List/Maps with priority areas and pilot sites
- ✓ List of species to be used in restoration work
- ✓ Technical documents describing restoration methodologies and techniques
- ✓ List of restoration team members
- ✓ Protocols with local actors and public agencies
- ✓ Documents with permits
- ✓ Contracts with experts, coordinator, partners, etc
- ✓ Invoices of acquired materials and equipment
- ✓ Baseline data sets
- ✓ Number of participants in training courses
- ✓ Number of training courses/evaluation reports
- ✓ Number of hectares restored and planted
- ✓ Number of awareness raising materials
- ✓ Press clippings from public events
- ✓ Number of participants in public events
- ✓ Monitoring reports

#### Assumptions:

- ✓ All concerned local groups agree to participate in the FLR plan
- ✓ The socio-political context is favorable and remains such during the project life span

### 7.3.2 Projects that promote the second objective “Enhance the effectiveness of the management team by providing facilities, capacity, tools, and resources needed to manage a large area”

#### PROJECT 5

##### Capacity Building (CB)

**Specific objective:** To undertake a detailed assessment of the staffing requirements for the SBR and the capacity building needs of existing staff, local guides and volunteers.

**Approximate duration:** 24 months

**Implementing team:** SBR

**Project partners:** Consultants, trainers, IUCN, scientific/conservation/education institutions

**Indicative budget (EURO):**

Consultancy fees	12,000
Capacity building plan (training, courses, travel)	60,000
Office and management expenses	8,000

**TOTAL**

**80,000**

#### **Output 1: Gap analysis and capacity building assessment for SBR Management Team**

---

Actions:

- ✓ Hire expert consultant
- ✓ Organize workshop/interviews with staff and other concerned people (APAC, ACS, etc)
- ✓ Discuss outcomes of assessments with beneficiaries and agree on operational workplan

Indicators:

- ✓ TOR for consultant
- ✓ Assessment report and CB strategy with operational workplan

Assumptions:

- ✓ SBR is able to secure services of qualified CB expert
- ✓ Staff and other stakeholders willing to collaborate and take active part to the process

#### **Output 2: Implementation of the capacity building plan for the staff of SBR**

---

Actions:

- ✓ Organize specific CB actions for key staff of the SBR and collective training for staff and volunteers, as per assessment and requirements
- ✓ Evaluate impact of the CB plan once this is finalized

Indicators:

- ✓ Trip reports, agenda for training courses etc.
- ✓ Completed evaluation sheets

Assumptions:

- ✓ SBR and consultant are able to design effective CB plan and identify best opportunities for training and upgrading staff skills (in Lebanon or in any other country)

**PROJECT 6(a)**  
**Maasser Park House**

**Specific objective:** To equip and staff the new SBR headquarters in the village of Maasser el Shouf, that includes a visitor/information center, facilities for conferences and workshops, gift shop, and a small guesthouse for researchers and staff

**Project partners:** Lebanese Government (MOE), Municipality of Maasser el Shouf and other authorities, local community, entrepreneurs, experts and institutions, and UNESCO

**Implementing team:** SBR

**Approximate duration:** 3 years

**Indicative budget (EURO):**

Equipment for the centre	40,000
Staff (centre manager + 2 part-time assistants)	45,000
Permanent exhibit on SBR and biosphere reserves	20,000
Maintenance and consumables	20,000

**TOTAL** **125,000**

**Output 1: Purchase equipment for the Park House**

---

Actions:

- ✓ Discuss and sign contract with building company and other suppliers
- ✓ Buy materials and equipment
- ✓ Supervise and monitor works

Indicators:

- ✓ Supervision team created within the SBR
- ✓ Contracts and agreements in place
- ✓ Invoices and receipts

Assumptions:

- ✓ All parties (SBR, local authorities, builders) perform their job efficiently

**Output 2: Hire staff to manage the Park House**

---

Actions:

- ✓ Formulate TOR and issue tender for staff recruitment
- ✓ Select and hire staff

Indicators:

- ✓ TOR and announcements in newspapers, internet etc
- ✓ CVs of candidates
- ✓ Recruitment contracts

Assumptions:

- ✓ Adequate, capable staff with required profile found
- ✓ Employment agreements reached

### **Output 3: Set up permanent exhibition on SBR and Biosphere Reserves around the World**

Actions:

- ✓ Design and plan exhibit and facilities
- ✓ Buy materials and equipment, finalize exhibit, and set up facilities

Indicators:

- ✓ Operational plans for the exhibit and facilities
- ✓ Receipts for exhibit and facilities

Assumptions:

- ✓ SBR is able to design, plan and set up exhibit with the support of UNESCO

### **Output 4: “Biosphere Shop” selling local goods/gifts/products**

Actions:

- ✓ Obtain license
- ✓ Plan and select items for sale
- ✓ Reach commercial agreements with suppliers and develop sales strategy

Indicators:

- ✓ Business plan for the shop with selected items etc.
- ✓ Signed commercial agreements/contracts with suppliers

Assumptions:

- ✓ Needed materials and equipment available for purchase

## PROJECT 6(b)

### Niha Park House

**Specific objective:** To find and rehabilitate a multi-purpose center for the SBR in the village of Niha to be used as a visitors and education centre, a focal point for conservation and research work, and support for rural development that benefits the local community

**Approximate duration:** 3 years

**Implementing team:** SBR

**Project partners:** Lebanese government (MOE), Municipality of Niha and other local authorities, members of the local community, entrepreneurs, national and international experts and institutions/universities

**Indicative budget (EURO):**

Planning and building license	10,000
Building expenses / Cost	400,000
Equipment for the centre	40,000
Staff (centre manager + 2 part-time assistants)	45,000
Maintenance and consumables	24,000

**TOTAL**

**519,000**

#### Output 1: Joint agreement between Niha Municipality and SBR for the establishment of the Niha Park House

---

**Actions:**

- ✓ Negotiate joint partnership with Municipality of Niha
- ✓ Plan and design the building rehabilitation
- ✓ Obtain building license

**Indicators:**

- ✓ MOU between SBR and Municipality of Niha
- ✓ Building or restoration project signed by architect
- ✓ License provided by competent authority

**Assumptions:**

- ✓ Municipality willing and capable of entering into partnership
- ✓ Suitable land available at reasonable conditions
- ✓ Agreement reached with architect and constructors

#### Output 2: Restore and equip the Niha Park House

---

**Actions:**

- ✓ Discuss and sign contract with building company and other suppliers
- ✓ Buy materials and equipment
- ✓ Supervise and monitor work



**Indicators:**

- ✓ Supervision team created within SBR
- ✓ Contracts and agreements in place
- ✓ Invoices and receipts

**Assumptions:**

- ✓ All concerned parties (SBR, local authorities, constructors, etc) perform their job efficiently, and in a timely and coordinated fashion

**Output 3: Hire management team**

---

**Actions:**

- ✓ Formulate TOR and issue tender for staff recruitment
- ✓ Select and hire staff

**Indicators:**

- ✓ TOR and announcements in newspapers, internet, etc
- ✓ CVs of candidates
- ✓ Recruitment contracts

**Assumptions:**

- ✓ Adequate, capable staff with required profile found and employed

**Output 4: Set up permanent exhibition on biological diversity and ecology of SBR**

---

**Actions:**

- ✓ Design and plan exhibit
- ✓ Buy materials and equipment and finalize exhibit

**Indicators:**

- ✓ Operational document and workplan for the exhibit in order
- ✓ Invoices and receipts

**Assumptions:**

- ✓ SBR staff able to design, plan and set up a good exhibit

**Output 5: Set up a “Wild Shop” selling local goods and gifts/products**

---

**Actions:**

- ✓ Obtain license
- ✓ Plan and select items for sale
- ✓ Reach commercial agreements with suppliers and run sale scheme

**Indicators:**

- ✓ Business plan for the shop with selected items
- ✓ Signed commercial agreements/contracts with suppliers

**Assumptions:**

- ✓ Needed materials and equipment available for purchase

**PROJECT 6(c)**  
**Ammiq Park House**

**Specific objective:** To establish a multi-purpose center for the SBR at the Ammiq Wetland in joint partnership with the “A Rocha” Association, to be used as a thematic visitors and education center on water and water ecology/management/conservation, and a focal point for conservation work and research in Ammiq.

**Approximate duration:** 3 years

**Implementing team:** SBR, and A Rocha

**Project partners:** Lebanese government (MOE), Municipality of Ammiq, landowners, entrepreneurs, national and international experts, and universities

**Indicative budget (EURO):**

Planning and building license 10,000

Building expenses 400,000

Equipment for the centre 40,000

Staff (centre manager + 2 part-time assistants) 45,000

Maintenance and consumables 24,000

**TOTAL**

**519,000**

**Output 1: Joint agreement between Ammiq Municipality, SBR, A Rocha and landowners for the establishment of the Ammiq Park House**

---

**Actions:**

- ✓ Negotiate joint partnership with Ammiq Municipality and A Rocha
- ✓ Plan and design of the building
- ✓ Obtain building license

**Indicators:**

- ✓ MOU between SBR, A Rocha, and Ammiq Municipality
- ✓ Building or restoration project signed by Architect
- ✓ License provided by competent authority

**Assumptions:**

- ✓ Municipality willing and capable of collaborating
- ✓ Suitable land available at reasonable conditions
- ✓ Agreement reached with architect and constructors

**Output 2: Build and equip the Ammiq Park House**

---

**Actions:**

- ✓ Discuss and sign contract with building company and other suppliers
- ✓ Buy materials and equipment
- ✓ Supervise and monitor works

**Indicators:**

- ✓ Supervision team created within SBR and A Rocha
- ✓ Contracts and agreements in order

**Assumptions:**

- ✓ All concerned parties perform their job efficiently and in a timely fashion

**Output 3: Hire management team**

---

**Actions:**

- ✓ Formulate TOR and issue tender for staff recruitment
- ✓ Select and hire staff

**Indicators:**

- ✓ TOR and announcements in newspapers, internet etc
- ✓ CVs of candidates and recruitment contracts

**Assumptions:**

- ✓ Adequate, capable staff with required profile found and employed

**Output 4: Set up permanent visitor facility and exhibition on water and wetlands**

---

**Actions:**

- ✓ Design and plan exhibit and facilities
- ✓ Buy materials and equipment, finalize exhibit and set up facilities

**Indicators:**

- ✓ Operational document and workplan for the exhibit and facilities
- ✓ Invoices and receipts

**Assumptions:**

- ✓ SBR and A Rocha able to design and set up exhibit & visitor facilities for Ammiq

**Output 5: Set up “Wild Shop” selling local goods and other gifts/products**

---

**Actions:**

- ✓ Plan and select items for sale, obtain license
- ✓ Reach commercial agreements with suppliers

**Indicators:**

- ✓ Business plan for the shop with selected items
- ✓ Signed commercial agreements/contracts with suppliers

**Assumptions:**

- ✓ Needed materials and equipment available for purchase

**Output 6: Design and run education and awareness raising program for Ammiq wetland**

---

**Actions:**

- ✓ Evaluate potential and needs, meet beneficiaries and collect ideas
- ✓ Design yearly workplan and run education/visitors program

**Indicators:**

- ✓ Planning document for education program with list of activities,
- ✓ Education materials (publications, leaflets etc)

**Assumptions:**

- ✓ Local stakeholders willing to provide constructive input
- ✓ Local citizens and other beneficiary groups (schools, tourists etc) join the program
- ✓ SBR and A Rocha capable of implementing high-quality education work
- ✓ National media support the program and collaborate actively

**7.3.3 Projects that promote the third objective “Support rural entrepreneurs and the weakest sectors of village society (women, youth, unemployed) by boosting sustainable business practices and facilities that are linked to tourism, agriculture, and traditional products”**

**PROJECT 7(a)**

**Products from the Land of Cedars**

**Background:** Over the past year the SBR, with the help of development agencies, have supported family-based enterprises/workshops for local production, especially food and other goods originating from wild or cultivated plants (such as jams, juices, syrups, honey, nuts, dried herbs, etc). As a result over 70 food and herbal products are now available for sale from private retailers and at the entrances of the SBR (*see Marketing and Business Plan*). This activity has led to an increased income for many families, and especially local women. In spite of this, the potential for improving local livelihoods and alleviating poverty around the SBR is still largely untapped. The purpose of this project is to focus on the potential for locally-made handicrafts (such as wood carving, ceramics, weaving etc), as well as to encourage micro-enterprises and production chains for a limited number of best-selling handicraft.

**Specific objective:** To support handicraft production and sale in the SBR by carrying out a quantitative and qualitative inventory of available and potential handicraft products, and evaluating best opportunities for new production chains.

**Approximate duration:** 12 months

**Implementing team:** SBR

**Project partners:** Local municipalities, village communities, entrepreneurs, national and international NGOs

**Indicative budget (EURO):**

Consultancy fees	12,000	
Materials	3,000	
Office expenses	2,000	
Travel	3,000	
<b>TOTAL</b>		<b>20,000</b>

**Output 1: Quantitative and qualitative inventory of available and potential handicraft products**

---

**Actions:**

- ✓ Set up work team, prepare TOR, hire consultant
- ✓ Carry out research through interviews, meetings, and prepare report

**Indicators:**

- ✓ TOR for work
- ✓ Report on “state of handicrafts” in the Shouf

**Assumptions:**

- ✓ Qualified expertise is available to undertake study
- ✓ Local actors willing to collaborate

**Output 2: Promotional leaflet on handicrafts in the Shouf**

---

**Actions:**

- ✓ Produce leaflet based on the result of the assessment study
- ✓ Circulate information to concerned actors and the media

**Indicators:**

- ✓ Promotional leaflet
- ✓ Articles in the press, information featured on TV and radio

**Assumptions:**

- ✓ Media and decision makers willing to collaborate
- ✓ SBR capable of raising general interest on this issue

**Output 3: Increased awareness of local villagers on the economic potential of handicrafts**

---

**Actions:**

- ✓ Organize two workshops in different villages of the SBR to inform citizens of the outcomes of the study and discuss opportunities for reviving handicrafts and setting up new businesses

**Indicators:**

- ✓ Number of participants who attend the workshop
- ✓ Number of applications to small grants scheme
- ✓ Other proposals for developing handicrafts

**Assumptions:**

- ✓ Local actors willing to join the project and engage in new production chains and businesses for handicrafts production and sale

## PROJECT 7(b)

### Nursery and Botanic Garden

**Background:** The aim of this project is to establish a tree nursery, in connection with the Niha Park House. The tree nursery will be established on land owned by the Niha Municipality to produce seedlings of selected native species that will be available to local entrepreneurs at discount prices, as well as “unusual” wild plant species for FLR work within the SBR. A botanic garden and commercial plant shop will be attached to the tree nursery, with the objective of attracting visitors, supporting education, and increasing the revenues of the Niha Park House.

**Specific objective:** To secure seeds and cuttings from plants of selected native trees, shrubs and herbs to be used in plant conservation field work, FLR work, and community-based production and marketing of edible/aromatic/medicinal plants.

**Approximate duration:** 3 years

**Implementing team:** SBR, local NGOs, local community cooperative, and local investors

**Project partners:** MOE, MOA, Niha Municipality

**Indicative budget (EURO):**

Staff costs (one part time coordinator + one full time technician)	66,000
Consultancy fees (@18,000/yr x 3)	54,000
Local community women cooperative (@40,000/yrX3)	120,000
Travel	30,000
Tree nursery equipment and materials	50,000
Publications	20,000

**TOTAL** **320,000**

#### **Output 1: Identification of a selection of native plant species that increase forest resilience, facilitate forest recovery, and support medicinal/aromatic plant production**

---

**Actions:**

- ✓ Field inventory of plant species in the different habitats of the SBR
- ✓ Selection of a set of plants that represent different life strategies such as time of sprouting; fruit production; nitrogen fixation
- ✓ Identification of suitable populations of the selected species for seed/plant collection in the SBR

**Indicators:**

- ✓ Inventories of available plants
- ✓ List of selected species
- ✓ Maps/list of sites for plant material collection

**Assumptions:**

- ✓ The Ministries of Agriculture and Environment are willing to participate in the project and provide the permits for plant collection and propagation in the SBR

#### **Output 2: Establishment of tree nursery and botanic garden of native species in the SBR**

---

**Actions:**

- ✓ Assess local conditions for a tree nursery and garden(water, soil conditions, etc)
- ✓ Obtain permission and sign protocols with public administration/local actors
- ✓ Buy tree nursery equipment and install in selected sites
- ✓ Organize training courses by an expert on plant production/propagation
- ✓ Develop plant production/propagation protocols for all species in nursery
- ✓ Gather plant material in the field and transferring to the tree nursery
- ✓ Treat plant material to conserve it for successful propagation
- ✓ Produce plants in the tree nursery

**Indicators:**

- ✓ Documents with permissions and protocols
- ✓ Invoices of tree nursery equipment
- ✓ Evaluation reports from training courses and number of people trained
- ✓ Number of plants produced per species

**Assumptions:**

- ✓ All involved actors are willing to collaborate
- ✓ All needed materials are available and can be purchase on site (Lebanon)
- ✓ Qualified, motivated staff available for hiring
- ✓ Adequate stock of plants available in the wild
- ✓ Know-how successfully transferred by external experts to local team
- ✓ Villagers and decision makers actively support the project

**Output 3: A “Cooperative for Women” in the SBR**

---

**Actions:**

- ✓ Identify legal requirements for the establishment of a local cooperative and support the local group of women to follow procedures
- ✓ Conduct an awareness plan to attract local women to the new cooperative
- ✓ Develop criteria and identify the candidates, and select beneficiaries
- ✓ Develop/implement a capacity building plan (institutional development for the cooperative members; plant production; marketing & business; etc)
- ✓ Acquire and distribute the necessary equipment (i.e. for drying plants, essences distillation; packaging) and the plant materials from the tree nursery
- ✓ Develop and implement a marketing plan

**Indicators:**

- ✓ Quality of awareness materials
- ✓ Number of women trained
- ✓ Evaluation reports from the different training courses
- ✓ Number of products from the different aromatic/medicinal plants
- ✓ Marketing plan and income from annual sales of the cooperative

**Assumptions:**

- ✓ Local community, especially women, are available and happy to join the project
- ✓ Critical number of motivated, skilled women join the cooperative
- ✓ All necessary materials and equipment available for purchase in Lebanon
- ✓ Produce from cooperative is sold through well establish market channels

## PROJECT 8

### Small Grants Program

**Background:** Small grants have been shown to be effective tools in supporting local livelihoods and alleviating poverty of small and medium-size enterprises in many areas of the world. Through this project, ACS will facilitate the establishment of a committee to manage a small grants program for the benefit of the citizens living in the villages around the SBR. A ceiling of € 70,000/80,000 will be available to local actors each year, and single grants will vary from €5,000 to 10,000. The grants will be advertised each year through calls for proposals, and the best application will receive funding and technical assistance for the implementation of the project. SBR will also build the capacity of local actors on grant writing and project management. The grants will be available to set up new business or support existing ones, especially in the fields of traditional productions (agriculture, NTFP, handicraft) and tourism-related services.

**Specific objective:** To support and encourage grassroots businesses by setting up a small grants scheme available to local actors, aimed at supporting innovative sustainable business, mainly in the areas of tourism, handicrafts, and agriculture/natural products.

**Approximate duration:** 3 years

**Implementing team:** SBR

**Project partners:** Local municipalities, village communities, entrepreneurs, NGOs and grassroots citizens groups, the media.

**Indicative budget (EURO):**

Salaries (1 full time project manager)	60,000
Grants	200,000
Office expenses and materials	17,000
Travel	3,000

**TOTAL** **280,000**

#### **Output 1: An established steering committee for the small grants program**

---

**Actions:**

- ✓ Develop TOR for the steering committee
- ✓ Select potential participants and invite them to join
- ✓ Convene meetings of the steering committee as appropriate

**Indicators:**

- ✓ TOR document
- ✓ List of committee members and their workplan

**Assumptions:**

- ✓ Members of the steering committee willing to join and commit their time to make the program a success



## **Output 2: A functional grants program for a pilot phase of three years**

---

### **Actions:**

- ✓ Develop “rules of the game”
- ✓ Advertise grants, collect applications, and conduct grants writing workshops
- ✓ Select successful application and sign contract with awardees

### **Indicators:**

- ✓ “Rules of the game” document available to potential applicants
- ✓ Grant advertising (local press, posters, internet, etc)
- ✓ Agenda of grants writing program and list of participants
- ✓ List of successful applications

### **Assumptions:**

- ✓ SBR able to set up and run effective and attractive scheme
- ✓ Local citizens willing to develop new projects, apply for grants, attend workshops

## **Output 3: Technical support to the awarded grants**

---

### **Actions:**

- ✓ Agree on technical assistance plan with project implementers
- ✓ Identify experts and volunteers to provide assistance

### **Indicators:**

- ✓ Technical assistance agreements
- ✓ List of technical supporters (“supervision and back up”) for each grant

### **Assumptions:**

- ✓ SBR and grantees are able to identify key elements for technical assistance
- ✓ Technical supporters available and willing to do the job properly

## **Output 4: Monitoring and evaluation of the grants**

---

### **Actions:**

- ✓ Prepare monitoring sheet that will be filled in by the technical experts
- ✓ Undertake final evaluation of the grants

### **Indicators:**

- ✓ Monitoring sheets
- ✓ Evaluation report for each grant

### **Assumptions:**

- ✓ SBR able to perform good quality monitoring and evaluation
- ✓ Grantees willing to collaborate

## **Output 5: Communication and promotion of the grants scheme**

---

### **Actions:**

- ✓ Produce leaflet advertising new projects and grants at the end of every year
- ✓ Organize press conferences and field trips to the new projects

### **Indicators:**

- ✓ Leaflet with list and description of grants available for each year
- ✓ Press releases, articles, TV footage etc

### **Assumptions:**

- ✓ Lebanese media interested and willing to support communication on new projects

**7.3.4 Projects that promote the fourth objective “Boost the image of the SBR at the national and global level and position it as a leading destination for tourism, a showcase for nature conservation, and an example of ecosystem-based adaptation to climate change in the region”**

**PROJECT 9**

**World Class Destination - Land of Cedars**

**Background:** The cedar forests of Lebanon enjoy the unique distinction as the oldest documented forests in history, and were featured prominently in the earliest written records of the Sumerians, dating from the third millennium BC. People around the world are familiar with the cedars of Lebanon because of numerous references in the texts of the Old Testament. The Cedars of Lebanon are not only an important part of the cultural heritage of the people of Lebanon, but of all humanity.

**Specific objective:** To spread awareness about the SBR and the services and products available to visitors and position the SBR as a world class protected area & attractive tourism destination.

**Approximate duration:** 3 years

**Implementing team:** SBR

**Project partners:** Ministries of Tourism and Environment, national and international media, local municipalities, national and international experts, local entrepreneurs, NGOs

**Indicative budget (EURO)**

Salaries (1 full time Senior Communications Officer)	48,000
Production of coffee-table book	50,000
Video and CD	40,000
Web site set up and maintenance	10,000
Development of trade mark	10,000
Office cost and equipment	15,000
Travel costs	9,000

**TOTAL** **182,000**

**Output 1: Communication and marketing strategy and workplan for SBR**

**Actions:**

- ✓ Develop TOR, publicize position, and hire senior communication officer
- ✓ Design a communications and marketing strategy
- ✓ Develop and implement workplan

**Indicators:**

- ✓ TOR, list of candidates, CV of candidates
- ✓ Communication and marketing strategy, workplan, and calendar of activities

**Assumptions:**

- ✓ Good candidates available for the position
- ✓ The terms of the contract are attractive for qualified Lebanese candidate

**Output 2: Logo of “Land of Cedars” created and made available to local economic actors**

---

**Actions:**

- ✓ Hire branding expert or launch tender for logo of the quality mark
- ✓ Define specific criteria and rules for the use of the mark
- ✓ Negotiate agreements for the use of the mark with local stakeholders
- ✓ Organize public launch of the quality mark and the set of products and services

**Indicators:**

- ✓ Tender, MOU, short listed quality marks
- ✓ Criteria and set of rules for use of the mark
- ✓ Contracts or MOUs with beneficiaries and data base of products and services
- ✓ Press releases, articles, footage

**Assumptions:**

- ✓ Expert available
- ✓ Quality mark attractive for potential users and well received by media and public
- ✓ Critical number of requests and agreements reached

**Output 3: “Land of Cedars” Collection (Book, CD, Video)**

---

**Actions:**

- ✓ Negotiate patronage of UNESCO and possible collaboration
- ✓ Set up team of experts for creation of the collection
- ✓ Publication and distribution (sale) of the collection through appropriate channels

**Indicators:**

- ✓ MOU between UNESCO and SBR
- ✓ TOR of team of experts and contracts/agreements
- ✓ Numbers of books, CDs, and videos sold

**Assumptions:**

- ✓ UNESCO ready to support the initiative
- ✓ Experts available and hired
- ✓ Good material, picture, text, footage collected

**Output 4: “Land of Cedars” website nested within ACS web page**

---

**Actions:**

- ✓ Hire expert and design page and its contents
- ✓ Nest page in ACS website and negotiate agreements for links with other websites
- ✓ Organize public launch with involvement of national and international media

**Indicators:**

- ✓ TOR and contracts, workplan for the expert
- ✓ Website itself and number of links in other web pages
- ✓ Number of hits/year and feedback from website users

**Assumptions:**

- ✓ Expert available and hired
- ✓ Critical mass of web sites accepts to host link and publicize new project

## PROJECT 10

### Ecosystem-Based Adaptation to Climate Change

**Background:** Climate change presents one of the most serious and globally significant challenges to society and ecosystems around the world today. The role of biosphere reserves is essential to rapidly seek and test solutions to the challenges of climate change as well as monitor the changes as part of a global network. In other words, biosphere reserves can be areas for demonstrating adaptation measures for natural and human systems, and assisting the development of resilience strategies and practices. Buffer zones and transition areas of biosphere reserves may also be used to test many mitigation strategies.

**Specific Objective:** To develop plans for adaptation and mitigation of adverse effects of climate change on both the natural systems and on the livelihoods of local communities.

**Approximate duration:** 3 years

**Implementing team:** SBR with help from IUCN and UNEP

**Project partners:** Ministries of Tourism and Environment, national and international media, local municipalities, national and international experts, local entrepreneurs, NGOs

**Indicative budget:EURO**

Salaries (one full time Senior Coordinator + one full time Assistant)	66,000
Consultancy fees (@18,000/yr x 3)	54,000
Video and CD	40,000
Publications	20,000
Office cost and equipment	15,000
Travel costs	10,000
<b>TOTAL</b>	<b>205,000</b>

#### **Output 1: Plans for adaptation and mitigation of adverse effects of climate change on the natural systems and the livelihoods of local communities surrounding the SBR**

---

**Actions:**

- ✓ Prepare TOR for plan and hire senior coordinator and assistant
- ✓ Research, field work, and interview with stakeholders
- ✓ Production, adoption, and publication of report
- ✓ Press release/presentation of the report to Lebanese public, media, and decision makers

**Indicators:**

- ✓ Reliability of predictions made regarding the effects of climate change on the SBR
- ✓ Feedback received from knowledgeable/scientific sources in Lebanon
- ✓ Number of articles, TV programs, etc. generated by the findings of the report

**Assumptions:**

- ✓ The project is able to find qualified expert to prepare the climate change plan
- ✓ The SBR team provides adequate backup and guidance to coordinator

## CHAPTER 8. WORKPLAN, MONITORING, AND EVALUATION

### 8.1 Project Work plan

Objectives	Projects	Importance of the projects	Priority	Timeline
<b>First Objective</b> Conservation and restoration of biological diversity, ecological integrity, and ecosystem services through high-profile, science-based research and fieldwork	<b>Project 1</b> Demarcation of Boundaries of Core Zone/Avoid Conflict	To demarcate boundaries that cause conflict with private owners and thereby discourage funding agencies from investing in the SBR	1	2013-2016
	<b>Project 2</b> Biodiversity Conservation and Recovery Plan	To increase funding for biodiversity and conservation	1	2013-2015
	<b>Project 3</b> Ecosystem Services and their Economic Value	To increase knowledge of ecological processes & ecosystem services in the SBR	1	2012-2013
	<b>Project 4</b> Forest Landscape Restoration (FLR)	To prevent forest fires and upgrade land that is prone to desertification	1	2012-2017
<b>Second Objective</b> Enhance effectiveness of the Management Team by providing facilities, capacity, tools, and resources	<b>Project 5</b> Capacity Building	To define governance structure, increase core staff, and fill gaps in staff capacity	2	2013-2015
	<b>Project 6(a)</b> Maasser Park House	To accommodate visitors, staff, & researchers	1	2012- 2013
	<b>Project 6(b)</b> Niha Park House		2	2013-2015
<b>Project 6(c)</b> Ammiq Park House	1		2015-2017	
<b>Third Objective</b> Support rural entrepreneurs and the weakest sectors of village society by boosting sustainable business practices and facilities that are linked to tourism, agriculture, and traditional products	<b>Project 7(a)</b> Products - Land of Cedars	To decrease poverty amongst weakest individuals	2	2013-2015
	<b>Project 7(b)</b> Nursery/Botanic Garden	To decrease poverty amongst weakest individuals	2	2014-2017
	<b>Project 8</b> Small Grants Program	To assist local communities in benefitting from modern marketing	2	2013-2016
<b>Fourth Objective</b> Boost the image of the SBR at national/global level, place it as a leading destination for tourism and showcase for nature conservation, & example of ecosystem-based adaptation to climate change in region	<b>Project 9</b> Land of Cedars – World Class Destination	To help ecotourism to focus on priority issues and put the SBR on the world tourist map	1	2012-2015
	<b>Project 10</b> Ecosystem-Based Adaptation to Climate Change	To allow adaptation / mitigation of adverse effects of climate change	2	2013-2015

## **8.2 Annual Project Evaluation**

The current Management Plan (2012-2017) offers four main objectives that need to be met, and ten projects that need to be implemented, to allow the Shouf Biosphere Reserve to fulfill its mandate for the conservation and development of the natural and human resources under its management. However, the implementation of the Management Plan is directly dependent on the annual budget allocated to the SBR from the Ministry of Environment, as well as the funds that the Al-Shouf Cedar Society is able to secure from various sources.

The Annual Project Evaluation summarizes the effectiveness of the Management Plan in view of its objectives, projects, and funds available. This evaluation could form the basis of the annual report that the Appointed Protected Area Committee (APAC) presents to the Ministry of Environment.

## **8.3 Five Year Review of the Management Plan**

The purpose of the Five Year Review is to evaluate the effectiveness of the plan at the end of five years of implementation, assess its past objectives, adapt to contemporary threats, and take into consideration the current political and social climate in Lebanon.

The Five Year Review should concentrate on measurable, significant conservation outputs, and provide continuity and a baseline against which the state of the site, or changes in policy or management, can be assessed and further strategies or plans developed and implemented. This will provide a sound basis for the next SBR Management plan (2017-2022).

## **8.4 Monitoring Implementation**

The Appointed Protected Area Committee (APAC) will be responsible, on behalf of the Ministry of Environment, for monitoring the implementation of the Management Plan, as well making the necessary recommendations for the improvement of such implementation.

For monitoring to be effective, the APAC needs to meet regularly with the Al-Shouf Cedar Society to record progress, note the problems facing the SBR, and physically inspect the reserve to observe its condition and compliance with the Management Plan.

## **8.5 Mett-Forest Management Evaluation**

### ANNEXES

Annex 1- Law 532 and its amendment

Annex 2 - Marketing and Business Plan

Annex 3 - Ecotourism Plan

Annex 4 - Monitoring Plan

Annex 5 - Threat Reduction Assessment

Annex 6 - Assessment and Evaluation of Grazing Activities at the Shouf Cedar Nature Reserve