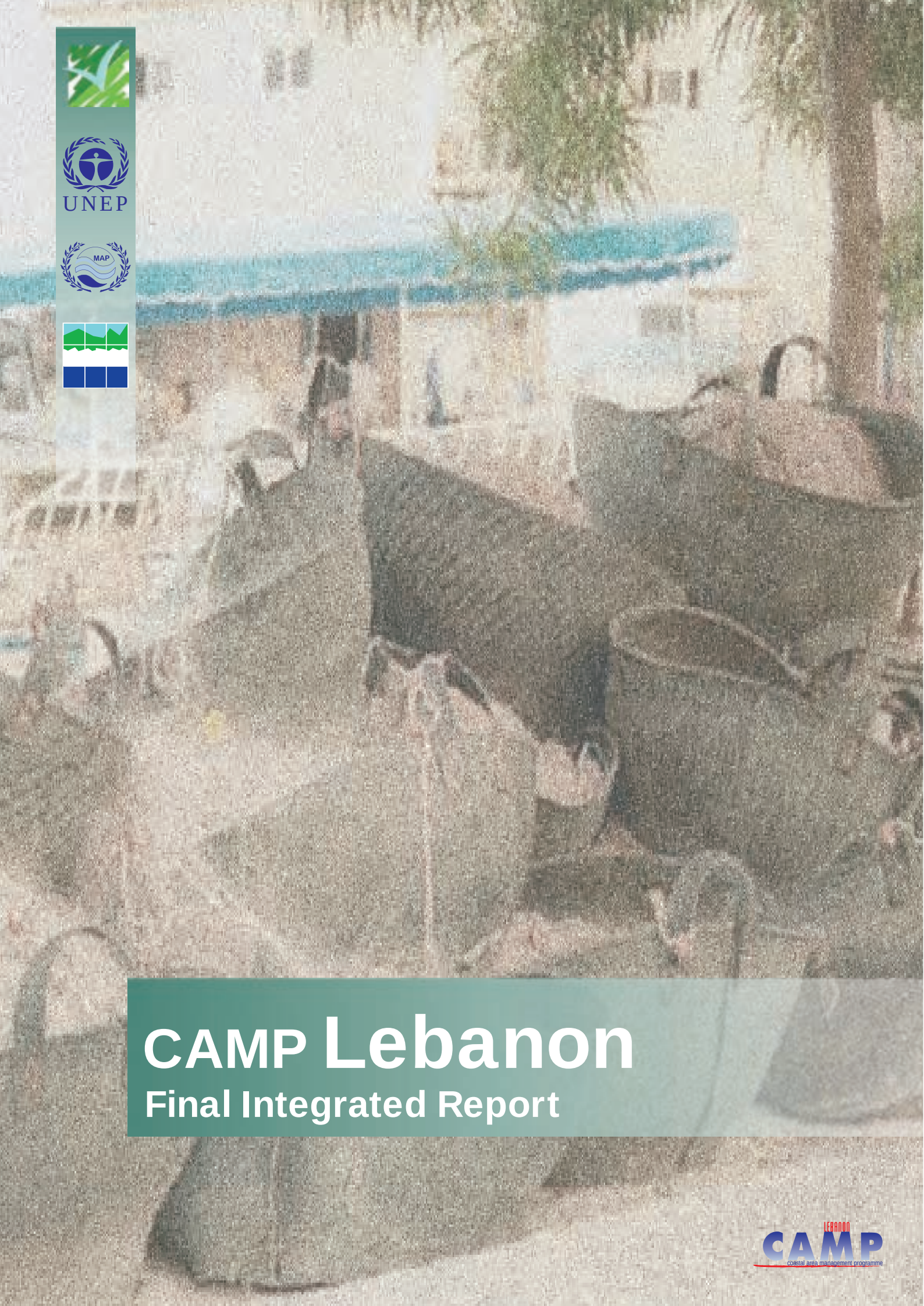

# CAMP Lebanon

## Final Integrated Report

LEBANON CAMP coastal area management programme

## Table of Contents

## List of Figures



## List of Photos

## List of Maps



## List of Tables

## List of Acronyms

| | |
|---|---|
| AFD | French Agency for the Development |
| AFDC | Association for Forest Development and Conservation |
| CCA | Carrying Capacity Assessment |
| CDR | Council for Development and Reconstruction |
| CAMP | Coastal Area Management Programme |
| DGUP | Directorate General of Urban Planning |
| EC | European Commission |
| EIA | Environmental Impact Assessment |
| EU | European Union |
| GIS | Geographic Information System |
| ICAM | Integrated Coastal Area Management |
| IWRM | Integrated Water Resource Management |
| LEDO | Lebanese Environment and Development Observatory |
| MAP | Mediterranean Action Plan |
| MIMA | Ministry of Interior and Municipal Affairs |
| MoT | Ministry of Public Transport |
| MoWE | Ministry of Water and Energy |
| NGOs | Non-Governmental Organisations |
| PAP | Priority Actions Programme |
| PRAs | Participatory Rural Appraisals |
| REA | Regional Environmental Assessment |
| RAC | Regional Activity Centre |
| SEA | Strategic Environment Assessment |
| SI(s) | Sustainability Indicator(s) |
| SPSA | Systemic and Prospective Sustainability Analysis |
| ToRs | Terms of Reference |
| UNEP | United Nations Environment Programme |
| USAID | United States Agency International Development |

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A special recognition goes to the CAMP thematic teams for their dedicated and professional works, to the municipalities of Damour, Sarafand and Naqoura, represented by their municipal councils and local communities, and to the experts that participated in and enriched the various CAMP Lebanon activities.

The success of CAMP Lebanon was not to be possible without the close partnership and continuous communication among all these entities.

**Sawsan Mehdi**
National CAMP Co-ordinator

# Preface

The CAMP Lebanon Project is implemented within the Coastal Area Management Programme (CAMP) of the Mediterranean Action Plan (MAP) – UNEP, as one of its national projects. CAMP is the MAP component for sustainable coastal management, integrating environmental concerns into development planning and management, oriented at understanding and resolving practical environment, development and management problems in Mediterranean coastal areas. By applying the principles of sustainable development, and the methodologies and tools of Integrated Coastal and Marine Areas Management (ICAM), CAMP was implemented through thematic and sub-thematic activities within selected coastal areas.

The decision to implement a CAMP project for Lebanon was adopted at the Meeting of the Contracting Parties to the Barcelona Convention held in 1995 following a request presented by the Government of Lebanon. Since early 1999, several MAP missions were initiated to discuss the outcomes of the above-mentioned decision with the national authorities concerned by coastal zone management. Advanced discussions led to the decision to conduct this project in the area located to the South of Beirut, somewhere between Khaldeh and Sour (Tyre). As a result, a Feasibility Study for CAMP Lebanon Project was conducted in 1999 with the objective to address the requirements for CAMP implementation under the prevailing institutional and professional conditions in Lebanon. Three municipalities with different problematic and stakes were selected for an in-depth analysis and activity implementation, namely, the municipalities of Damour, Sarafand and Naquora. The Project Agreement to effectively execute CAMP Lebanon was signed in April 2001.

The project area was defined at two levels:

- The national coastal area located to the South of Beirut, the Capital; and
- The three municipalities of Damour, Sarafand and Naqoura, as the operational level.

The Project Agreement signed between the Ministry of Environment-Lebanon and UNEP defined the basic elements of the project including the project objectives and strategy, structure, its various phases and outputs, the project institutional structure, the activities to be implemented at project level, the funding and cost-sharing mechanism, the various institutions involved, the general workplan and timetable.

Due to the delay in launching the project, CAMP was subject to modifications in terms of financial aspects, as well as in formulating relevant activities. The Lebanese Environment and Development Observatory (LEDO), being initially identified as one of CAMP Lebanon partners, phased out end of March 2002 (few months after CAMP has started), a matter that had an impact on the implementation of some common activities between the two projects, namely the activities related to indicators and the database. In February 2002, the Ministry took the decision to allocate the larger part of its cash contribution to the design and formulation of an integrated Master plan for Damour River Basin. Other minor contributions were granted to cover awareness raising and publication costs. On the other hand, the Ministry decided also to take out the National Steering Committee from the CAMP project management structure. MAP approved this decision during the meeting of February 15th 2002 in Beirut. Finally, the involvement of international consultants was reduced to its minimum. They were engaged only for those activities where national consultants were not available.

The general objective of the CAMP Lebanon Project is to contribute to national efforts towards sustainable management and environment protection in Lebanon. The immediate objectives of the project thematic activities are as follows:

i) To identify and elaborate strategies, solutions, tools and actions for sustainable development, environment protection and rational utilisation of coastal and marine resources of the national coastline, in particular related to the Southern Coast of Lebanon;

ii) To apply methodologies, tools and practices of sustainable coastal management and of Integrated Coastal and Marine Areas Management (ICAM);

iii) To contribute to the upgrading of the relevant national and local capacities;

iv) To provide for the application in practice of the project results and experiences, creating conditions for and implementing the post project activities, as envisaged by the Project Agreement; and

v) To use the experiences and results achieved by the project in other areas at national and regional level.

The project strategy is based upon the principles of sustainable development, applying the methodology of ICAM. The project was implemented based upon existing national legal and planning framework, in addition to available documentation and references. The Integrated Coastal and Marine Areas Management (ICAM) was the major tool applied to achieve coastal sustainable development.

CAMP Lebanon proposed an ICAM National Strategy and elaborated municipal development plans that expressed this strategy at the local level. Another main policy tool resulting from CAMP project was the preparation of an Integrated Coastal Area Management (ICAM) Law for Lebanon, in addition to other more sectorally-oriented activities, which through integration and exchange of information at various co-ordination meetings and participatory programme contributed to these main CAMP outputs. However, they individually proposed very concrete actions to better manage individual national and cultural resources.

The project activities started effectively in May 2002, following the CAMP Inception Workshop. The majority of the thematic activities were closed by the end of December 2003.

## Executive Summary

CAMP Lebanon Project is the first exercise experiencing the Integrated Coastal Area Management (ICAM) in Lebanon. Moreover, it is the first working out that addressed coastal management issues at municipal level.

By using ICAM as a tool for achieving sustainable coastal development, CAMP Lebanon draw on a quite atypical procedure to achieve its goal. Indeed, the project adopted a double operational approach: establishing a reciprocal working mechanism between national and local authorities. The additional particularity of the project consists of the mutual co-operation initiated around concerns associated to environmental issues, while knowing that environment is not the main preoccupation of the coastal municipal councils who preferred to establish links with projects bringing fast seen outputs such as the rehabilitation of existing infrastructure or the implementation of new ones. The last but not least project distinctiveness reflects the multi-stakeholders involvement whether they are of local, national and international representation.

CAMP Lebanon experience was helpful to test the relevance and applicability of national policies and recommendations at regional (CAMP area) and local (three selected municipalities) level, in addition to assess the responsiveness of local communities towards issues, such as the conservation of coastal resources, not obviously perceived as bearing an understandable influence on their livelihood. For that purpose, the Participatory Programme was given a great importance in the project. Gathering central and local stakeholders into a shared dialogue was a great step forward in demonstrating the magnitude of community involvement to enable national policies turning into operational.

CAMP Lebanon was composed of several thematic activities, some of which were themselves sub-divided into smaller components. All of the activities were based upon existing national legal and policy texts, available land-use plans, databases, studies, so forth. They were complemented by field works to collect facts taking place locally. In a few cases, the proposed methodologies were refined to better suit the foreseen local scenarios.

Thematic activities were:

- Integrated Coastal Area Management (ICAM);
- Integrated Water Resource Management (IWRM);
- Urban Management and Sustainable Development, Tourism and Sustainable Development;
- Marine Conservation Areas;
- Participatory Programme;
- Systemic and Prospective Sustainability Analysis (SPSA); and
- Data Management.

The thematic activity on Integrated Coastal Area Management (ICAM) was split into several components:

- land-use management;
- cultural heritage and sustainable development;
- environment, agriculture and fishery status;
- the socio-economic situation;
- ICAM legal framework; and
- ICAM National Strategy.

On the other hand, the execution of the thematic activity on “urban management and sustainable development” was combined together with the “land-use management” sub-activity.

In each of the thematic activities, several outputs of national, regional and local significance were highlighted. Wherever gaps were identified, these disparities were highlighted and solutions were proposed. These solutions were of policy, regulatory, legal, technical, administrative and/or awareness types. The project brought two main important national policy documents, the first being the legal framework for ICAM of Lebanon, while the second consists of elaborating the ICAM National Strategy.

The capacity building programme was a further important facet utilised in the different thematic and sub-thematic activities. Capacity development styles adopted were on-the-job training, organised training courses, seminars, field visits in addition to the formation of local committees working on sectoral issues such as water, waste, land-use, and so forth. Subjects such as the Systemic and Prospective Sustainability Analysis (SPSA), Integrated Coastal Area Management (ICAM), Carrying Capacity Assessment (CCA) applied on the tourism sector, the linkages between cultural heritage and sustainable development, integrated land-use management, Local Agenda principles, water management at river basin level, and many other topics, were welcomed not only by local authorities but also at the central government level.

CAMP Lebanon established partnerships in the context of several project proposals submitted to funding agencies, in an attempt to translate the studies resulting from the project into implementable projects and initiatives.

Finally, CAMP Lebanon was exposed to wide media coverage, in an effort to disseminate the project objectives, activities and lessons learned.

# Part I:
# Final Report

# 1. The Lebanese Coastline

The Lebanese coastal area expands over 210 km in length. It is depicted by the narrowness of the coastal plain except to the north and the south. The coastal area, which constitutes around 8% of the total area of the country, comprises 33% of the total built-up area in the country and hosts 55% of the total population (Dar Al-Handasah & IAURIF, 2003).

Decree 144 (1925) declares that the coast is delineated by the highest water point during the winter months, including the sand and gravel beaches. Considered part of Lebanon's maritime domain, the territorial sea extends 12 nautical miles from the coastline. The public maritime domain consists of the sea, including the sea bed and the sea floor, and the coast[1].

The coastal area is both the richest and most sensitive zone of the country[2]. It is an area where is concentrated the mass of the industrial, commercial and financial activities as well as the major Lebanese cities. Within a stretch of 500 m all along the coast, the urbanization occupies 40% of the total area, the agriculture 41% and the natural areas (beaches, dunes, etc.) constitute 19%[3].

Based on the coastal definition of the Regional Assessment Report for Coastal Zone Management (REA) Report[4], urbanised areas include urban fabrics (21%), large industrial and commercial units (10%), seaside tourists' resorts (7.5%) and sea embankment and dump sites (4%)[5]. Beaches and dunes cover only 49 km of the coastline (21%), while bare rocky outcrops about 11 km (4.7%). The 4 km of sea embankment or dumpsites includes the Beirut Normandy landfill but excludes the Metn-North Sea reclamation project.

Coastal water resources face constraints of natural, technical and legal nature. The non uniformity in precipitation distribution with 80% of precipitation occurs in a period of 3 months, and when water is least needed (especially for irrigation). This calls for very efficient water management schemes to contain this water and reduce losses. Also, the country's geology (karstic formations covering over 75% of the country's surface) and geomorphology (narrow steep valleys) makes it very difficult to efficiently store surface water, placing a major challenge to surface water management. At the technical level, the coast is characterised by the presence of an old inadequately maintained water supply infrastructure leading to water losses in the distribution networks exceeding 50%. Skilled staff is not readily available. Monitoring activities are almost non existent. Water and particularly wastewater treatment plants are insufficient, leading to surface and groundwater pollution. Water pricing structures are still based on lump sum values that do not reflect the true value of water, favour water losses and abuse. The outdated legal framework comprises numerous gaps and duplications in the allocation of responsibilities towards water management, mainly in the lack of watershed management approach to water management; the new water and wastewater establishments being set according to jurisdiction boundaries rather than water sheds; and, the lack of co-ordination among the water sector stakeholders and institutions responsible for water management. Water planning is almost non existent.

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[1] Source: Regional Environmental Assessment Report of the Coastal Zone of Lebanon, ECODIT-IAURIF, CDR, 1997.

[2] Schéma d'Aménagement du Territoire Libanais, Phase 1, Diagnostic et Problématiques, Dar al Handasah- IAURIF, CDR, 2002.

[3] Idem.

[4] The coastal zone is defined as a 16 km wide sea-land corridor along the Lebanese coastline (eight km on either side), with some exception: about 15 km off the coast of Tripoli to capture the Nakhl Islands and about 10 km inland north of Tripoli and east of Sour to capture agricultural plains (the Regional Assessment Report on the coastal zone of Lebanon, CDR / ECODIT-IAURIF, 1997).

[5] Lebanon State of the Environment Report, Ministry of Environment.

The lack of waste water treatment and solid waste collection converted the sea into a large dumping ground for the country's waste, whether of domestic, industrial or other waste sources, without any prior treatment. The implementation of the large developmental constructions was made with sand extracted from the sea which bumped the sea bottom configuration and the characteristics of fauna and flora habitats[6].

The majority of the industrial facilities are located on the coast as well, being based there with the objective of benefiting from a faster transportation towards their destinations. More than 20,000 units are located with many of them having no legal permits or located in unclassified industrial zones. This sector is considered as a major source of marine and water sources of pollution. The most polluting industries include tanning and dressing of leather, production of gas products, manufacture of fertilisers compounds and manufacture of cement. In the absence of industrial wastewater treatment, pollution loads into surface and coastal waters likely would increase. Given the anticipated industrial growth, pollution levels in surface and groundwater and coastal waters could reach alarming levels in the following industrial hot spots:

- Chekka: Sea discharge of asbestos and other suspended particulate matter (cement products plants);
- Selaata: sea discharges of phosphates and sulphates (fertiliser plant);
- Zouk Mosbeh-Zouk Mkayel: various industrial discharges to streams and sea (bleaches, dyes, etc.);
- Dora industrial area (petroleum storage, tanneries, etc.);
- Shoueifate, Ain Anoub, and Bchamoun industrial areas: wastewater discharge to the sea via the Ghadir stream;
- Ghazieh coast and Nahr Saitaniq (tanneries, soap factories).

The largest agricultural plains are the southern plain going from Ghazieh to Naqoura, Akkar plain, and Abu Ali Valley. The largest natural bodies are situated between Amioun and Jounieh to the North, and between Tyre and Naqoura to the South. These spaces, whether agricultural or natural, are subject to permanent urbanization pressure. Agricultural plots are gradually replaced by industrial and human development. To the South of Beirut, citrus, bananas and vegetables are being reduced due to urban expansion, especially with the absence of a clear national policy to guide and enforce the domestic agricultural production. Land degradation is highly noticed. Coastal woodlands are considerably decreased mostly due to overgrazing, charcoal production and urbanization. Natural woodland vegetation is restricted to few coastal areas, including slopes close to Kalb, Damour and Awali Rivers.

The fishery sector is nearly weakened. With an average of 4,000 fishermen based in the ports of Tripoli, Byblos, Jounieh, Beirut, Saida, Sarafand, Tyre and few fishermen in Naqoura[7], these fishermen are among the poorest communities in Lebanon, earning a monthly income rarely exceeding US$100. With such an income, fishermen can neither improve their lifestyles nor their fishing equipment. The boats, generally having a length between 8 to 10 meters, are fairly equipped and exploit the potentials offered by the actual fishing zones. Problems encountered by fishermen are as follows[8]:

- the risk of marine resource over-exploitation;
- the monopolisation of the fish market in Lebanon;

[6] Idem.

[7] Fishing as a job or hobby, Trans. Ministry of Agriculture, 1994.

[8] Idem.

- the lack of harbour management;
- the lack of hygiene while handling catches;
- the lack of any perspective leading to modernisation, diversification or nay types of projects;
- the lack of social security for farmers.

It is to note that the Lebanese society needs about 75 million US$ of fish per year, while its production amounts only to 7 million US$[9]. The 4,500 tons of fish produced in Lebanon is far below the level of the internal consumption. Therefore, Lebanon imports more than 10,000 tons of fish (1996), essentially from the Gulf countries, Morocco, and Turkey.

The very few coastal protected areas are limited to Tyre Beach Reserve (in the South), and Palm Islands (to the North). River basins such as Damour River, Awali River, and Al-Kalb River are declared as areas under protection (Decree enacted by the Ministry of Environment). Attempts to state other areas and river basins are currently under way. The REA Report on the coastal zone of Lebanon identified 12 sensitive sites as priority conservation areas due to their rich or unique ecological and landscape value. Among these sites, we can name: Akkar beach and dunes, Akkar agricultural plain, Ras El-Cheqaa, Amsheet-Jbeil coastal area, Nahr Ibrahim Valley, Nahr El-Kalb valley and river mouth, Damour agricultural plain, Rmeileh beach, Tyre beach, Iskandarouna, and Naqoura.

Hundreds of Mediterranean species of phytoplankton, algae, lichens, mushrooms, phanerogames, zooplankton and benthos, in addition to 357 fish species were reported, as well as 21 species of cephalopods, 4 species of turtles and 6 marine mammals. A noticeable number of these species originate from the Red Sea or the Indo-Pacific Ocean. Among these species, only one brown alga, *Stypopodium zonale*, is an invasive species that could constitute a real threat to the marine biodiversity. Other threats include the coastal modifications due to marinas and large tourism complexes, untreated waste water discharges, agricultural effluents, etc. that are implemented without a prior Environmental Impact Assessment (EIA) studies.

The cultural heritage of the coastal area of Lebanon consists mainly of large urban centres with a long settlement history. These centres are either still inhabited, such as the cities of Beirut, Sidon and Tyre, or are stand-alone mounds characterised by their outstanding topographical nature such as the ancient tells of Sarafand, Jiyye, Tell al-Burak, and Tell al-Maashuq. Apart from these large-scale features, smaller no less important cultural resources such as olive oil production complexes of the Late Roman period, ancient necropolis, old harbours, traditional town and village cores, vernacular architecture, cultural landscapes, natural and historic landmarks, as well as historic battlefields, characterise the coastal historic environment in that area. Another major section of the coastal cultural heritage includes traditional customs and beliefs as well as crafts, folklore and oral history. Major issues facing proper cultural resource management are considered critical issues common throughout the Lebanese coastal area. Among these issues are:

- the limited knowledge about the nature and extent of the cultural resources of the area;
- the lack of statutory and physical protection to classify and register national monuments; and
- the lack of conservation and maintenance programmes at almost all of the known sites and resources.

[9] Idem.

Tourism converges mainly towards Beirut and its environs, growing into small, medium and large summer resorts regardless of the status of water quality estimated in many occurrences to be highly polluted. In addition, the privatisation of beaches and the damage incurred to the coastal area by such massive tourism compounds as well as the anarchic implementation of industrial plants do not facilitate attaining sustainable tourism development for the coast. Marinas, large sea resorts complexes, and many other forms of mass tourism destinations and offers are increasingly encroaching the maritime domains, making ever harder to the Lebanese citizen to enjoy freely and without expenses the beaches that are public properties by-law.

Alternative forms of tourism on the coast are still quite limited. Besides visits to the coastal reserves of Palm Islands (Tripoli) and Sour Beach reserves, seashores witness the largest mass of tourism coastal destinations. Cultural and historical resorts are often frequented by foreign tourists rather than by locals. Nevertheless, there is an increasing demand for sunbathing in natural beaches instead of cement-built complexes. This increase in demand is reflected by the rising number of visitors to beaches such as the rocky beach located to the south of Batroun and the sandy beaches of Jbeil (Byblos), Jiyeh, Rmayleh and Sour (Tyre). Unfortunately, most of the natural beaches were altered by illegal constructions and large resorts. Sea water is affected by waste water discharges and as well as industrial effluents, making many of the citizens and inhabitants reluctant to enjoy bathing.

As for municipal role in coastal area management, there is a national growing momentum to recognise the vital role that municipal councils play in their community's development, even though sometimes, the financial viability of the local authorities are at stake and left to the whims of the central government's budgetary measures. Although there is a greater incentive to create processes that enhance community participation, however, such decentralised and participatory mechanisms are still new to most communities and will require a lot of time to be fully integrated into people's attitudes and views on their roles and that of their elected councils.

In terms of community participation, there is an increasing trend to activate the role of women and youth in community development. However, this often depends on communities' civil society. For instance, where a large and active number of NGOs exist, more women and youth appear in other developmental initiatives. Where experience in civil society is low and municipalities are new, there tends to be lower engagement from all members of the community.

Information sharing is a national concern, whether at the level of public-public relationship or public-private exchange. Indeed, and despite the huge number of studies commissioned by the government prior to implementing development projects (infrastructure, tourism, social, etc.), accessing these data reveals to be quite hard to reach. In the cases where these data are available, they are either outdated or just estimations or future projections and/or scenarios. The need for a coastal environment and development database becomes a must in case a proper national coastal strategy is to be implemented.

The current legal framework in Lebanon is pretty long-standing and obsolete. A framework law for an integrated coastal zone management was yet deficient, being until nowadays replaced with ministerial resolutions enacted to adjust sectoral matters such as public maritime domains, hunting, solid waste management, quarries, and so forth. Overlapped responsibilities amongst concerned institutions in addition to the lack of an adequate law enforcement and implementation instruments intensify the extent of coastal degradation and of its resources.

In other words, the lack of control and law enforcement on the one hand, and, the delays in implementing proper urban planning according to new parameters and the need for

appropriate infrastructure that meet the population growth and economic expansion on the other hand, resulted in the deterioration of the environment quality, sometimes reaching an irreversible status.

Many of the above-mentioned problems were addressed within the thematic activities of CAMP Lebanon. In some cases, these thematic activities were divided into sub-activities in order to achieve complementary results.

**Photo 1**:
**CAMP Inception workshop, May 2002**

## 2. CAMP Lebanon: Development of the Project

The CAMP Lebanon Project is implemented within the Coastal Area Management Programme (CAMP) of the Mediterranean Action Plan (MAP) of UNEP, as one of its national projects. CAMP is the MAP component for sustainable coastal management. By applying the principles of sustainable development, and methodologies and tools of Integrated Coastal and Marine Areas Management (ICAM), CAMP is implemented through individual thematic activities within selected coastal areas. Each individual CAMP project is initiated, approved, formulated and implemented following a general conceptual and institutional framework, applied according to specificities of each project (UNEP / MAP, 1999).

**Photo 2:**
**Initial visit of the Ministry of Environment and MAP to selected municipalities, 2002**

The decision to implement a CAMP project for Lebanon was adopted at the Meeting of the Contracting Parties to the Barcelona Convention held in 1995 following a request presented by the Government of Lebanon. Since early 1999, several MAP missions were initiated to discuss the outcomes of the above-mentioned decision with the national authorities concerned by coastal zone management. Advanced discussions led to the decision to conduct this project in the area located to the South of Beirut. Accordingly, a Feasibility Study for CAMP- Lebanon Project was prepared with the objective to address the requirements for CAMP implementation under the prevailing institutional and professional conditions in Lebanon. Three municipalities with different problematic and stakes were selected for an in-depth analysis and activity implementation, namely the municipalities of Damour, Sarafand and Naquora. The Project Agreement was signed in April 2001.

In the scope of the diagnostic study for CAMP carried out in 1999, eight municipalities were deeply screened for a potential implementation of CAMP programme at the local level. These municipalities are: Aramoun- Ain-Ksour- Bsatine; Damour; Jiyeh; Cheem; Saida; Neemeh; Sarafand and Borj Chemaly. Out of these eight locations, the towns of Damour and Sarafand were firstly selected as pilot areas for CAMP implementation. The choice was based upon a set of parameters and criteria pertaining to:

- the major socio-economic sectors in town;
- the status of the Municipality;
- the local communities and presence of Non-governmental Organisations (NGOs);
- the environmental situation at micro-level; and
- presence of favourable conditions for CAMP implementation.

**Photo 3:**
**Panoramic view of Naqoura beach**

After the Israeli withdrawal in May 2000 from the Southern Lebanese territory, the Ministry of Environment decided to include the town of Naqoura as the last and third pilot municipality due to the richness of its natural and landscape resources.

The Project Agreement signed between the Ministry of Environment-Lebanon and UNEP / MAP in April 2001, defines the basic elements of the project including the project objectives and strategy, structure, its various phases and outputs, the project institutional structure, the activities to be implemented at project level, the funding and cost-sharing mechanism, the various institutions involved, the general workplan and timetable. In addition, basic elements of individual project activities were defined, as well as the monitoring and reporting procedure.

Due to the delay in launching the project[10], CAMP was subject to modifications in terms of financial aspects as well as in formulating relevant activities. LEDO[11] phased out end of March 2002 (after being extended for additional 3 months), which surely had an impact on the implementation of some common activities between the two projects, namely, related to indicators and the database. In February, the Ministry took the decision to allocate a large part of its cash contribution to the design and formulation of an integrated Master plan for Damour River Basin. Other minor contributions were left for co-ordination, awareness raising and publication costs. On the other hand, the Ministry decided also to cancel the role of the National Steering Committee within CAMP. MAP approved this decision during the meeting of February 15th 2002 in Beirut.

CAMP Lebanon was based upon the principles of sustainable development, through applying the methodology of the Integrated Coastal Area Management (ICAM), the MAP tool aiming at reaching coastal sustainable development. The project was implemented within the existing national legal and planning framework, using as basic inputs existing planning and development-related documents, available information sources on natural resources, socio-economic conditions, problems, causes, sources and impacts of pollution.

[10] The Project was expected to start in September 2001; however, and due to administrative delays, the effective launching of the project took place in May 2002, immediately after the Project Inception Workshop.

[11] The Lebanese Environment and Development Observatory (LEDO) was Identified as a main partner to CAMP during the first phases of the project formulation.

**Photo 4:**
**Fishermen port in Sarafand**

# 3. CAMP Lebanon Objectives

The objectives of CAMP Lebanon Project were defined in accordance with:

- Priority needs, as presented within the Diagnostic Analysis report (1999) that highlights national needs and priorities; and
- The general objectives of MAP and of its Coastal Areas Management Programme (CAMP).

The general objective of CAMP Lebanon is to contribute to national efforts towards sustainable management and environment protection in Lebanon. The immediate objectives of the project thematic activities are as follows:

- to identify and elaborate strategies, solutions, tools and actions for sustainable development, environment protection and rational utilisation of coastal and marine resources of the national coastline, in particular related to the Southern Coast of Lebanon;
- to apply methodologies, tools and practices of sustainable coastal management and of Integrated Coastal and Marine Areas Management (ICAM);
- to contribute to the upgrading of the relevant national and local capacities;
- to provide for the application in practice of the project results and experiences, creating conditions for and implementing the post project activities, as envisaged by the Project Agreement; and
- to use the experiences and results achieved by the project in other areas at national and regional levels.

**Photo 5:**
**Agricultural plots neighboring the Damour River**

# 4. CAMP Lebanon Structure

The overall management of CAMP Lebanon was carried out by PAP/RAC (at MAP level) and the Ministry of Environment (at national level). The national management was secured by a National Co-ordinator appointed to ensure co-ordination between different levels (technical, Ministry, PAP/RAC and other RACs, municipalities). Following the request from the Ministry of Environment, a National Steering Committee was not constituted.

CAMP Lebanon was implemented by a team of national experts, guided and assisted by MAP experts and Thematic Centres. The MAP Regional Activity Centres (RACs) which contributed to the project implementation were the following:

- Priority Actions Programme / Regional Activity Centre (PAP/RAC);
- Blue Plan / Regional Activity Centre (BP/RAC);
- Environment Remote Sensing / Regional Activity Centre (ERS/RAC);
- Specially Protected Areas / Regional Activity Centre (SPA/RAC).

The international team managing the project was composed of:

- MAP:
  - Mr. Arab Hoballah, UNEP/MAP Deputy Co-ordinator.
- PAP/RAC:
  - Mr. Ivica Trumbic, PAP/RAC Director;
  - Mr. Marko Prem, PAP/RAC Deputy Director;
  - Mr. Philippe MacClenahan, PAP/RAC International Consultant;
  - Mr. Zoran Klarić, PAP/RAC Consultant;
  - Ms. Branka Barić, PAP/RAC Assistant.
- BP/RAC:
  - Ms. Elisabeth Coudert, Officer in charge of SPSA;
  - Mr. Simon Bell, Blue Plan International Consultant.
- ERS/RAC:
  - Ms. Sabina Carnemolla;
  - Ms. Monique Viel.
- SPA /RAC:
  - Mr. Chedly Rais, Officer in charge of CAMP.

The members of the Lebanese team contributing to the project Thematic Activities were the following:

- Integrated Coastal Area Management (ICAM):
  - Land-use management: Mr. Walid Bakhos, Urban Planner;
  - Cultural heritage: Mr. Sami Al-Masri, Historic Lebanon;
  - Socio-economic Analysis: Mr. Charles Abdallah, Economist;
  - ICAM Legal Framework: Mr. Ziad Baroud, Lawyer;
    Mr. Fadi Moghayzel, Lawyer;
  - ICAM National Strategy: Ms. Sawsan Mehdi, National CAMP Co-ordinator;
  - Agriculture, Environment & Fishery: MORES;

- Urban Management and Sustainable Development:
  - Mr. Walid Bakhos, Urban Planner;
- Integrated Water Resource Management:
  - Arab Resource Development;
- Marine Conservation Areas:
  - Amwaj Al Bîâa;
- Tourism and Sustainable Development:
  - Mr. Marwan Owaygen;
- Systemic and Prospective Sustainability Analysis;
  - MADA; NGO;
- Participatory Programme:
  - MADA; NGO.

In addition, Ms. Tania Mouawad, a student affiliated to the Notre Dame University, carried out her thesis on the "Fishery sector in CAMP area".

Each of the thematic expert / team worked at several levels; the technical work itself (in both facets, the theoretical and field works) in addition to the interaction with and establishing dialogue with the local authorities and communities (in all their representations) to transfer knowledge and ensure project sustainability. On the other hand, local participation was very active; and, this was highly reflected in the final reports relative to each of the thematic and sub-thematic activities[12]. Moreover, this participation was extended beyond the local context to include national stakeholders, such as the Directorate General for Urban Planning (DGUP), the Council for Development and Reconstruction (CDR), Ministries (Public Transport, Public Works, Public Health, Interior and Municipal Affairs, Water authorities, etc.). It is worth noting that a representative of the Council of Ministers office attended the training course on Integrated Coastal Area Management (ICAM) held in the context of CAMP Lebanon capacity building programme.

It is worth mentioning the role that the CAMP thematic activities played in bringing together national and local entities while trying to discuss and solve some issues that extensively affect the livelihood of some and are within the jurisdictions of others. The project witnessed the presence of people from different background and expertise, communicating together such as ministries, Non-governmental Organisations (NGOs), local authorities, individuals, scientific experts and academic institutions. In the same context, it is also to note that municipalities other than Damour, Sarafand and Naqoura were continuously invited to participate into the activities carried out by the various thematic activities, with the aim of disseminating the results of CAMP Lebanon and potentially replicate the lessons learned beyond CAMP.

[12] Summary report of each Thematic Activity is included as an Annex to this Report. Full reports are available at PAP / RAC and the Lebanese Ministry of Environment.

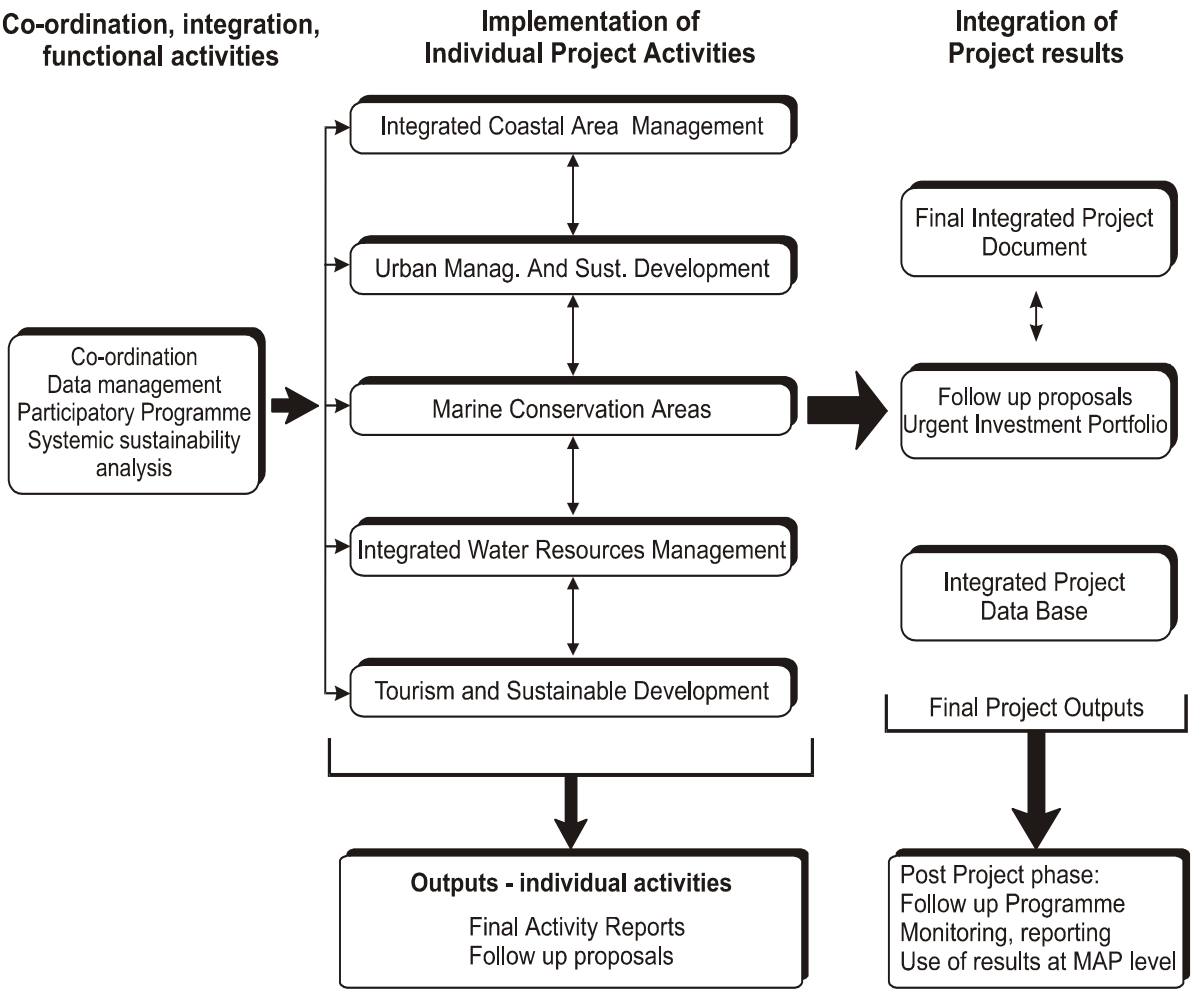



**Figure 1: CAMP Lebanon structure and phasing**

# 5. CAMP Lebanon Thematic Activities

The following section is limited to expose the added value of each activity and sub-activity implemented within CAMP Lebanon. Summary reports of the thematic and sub-thematic activities could be consulted at a later section (Annex) of the present integrated final report. It is worth mentioning that the uppermost added value of these reports relies in the fact that they were completed in both English and Arabic language, which permit their application by all types of users, thus avoiding language barrier.

## 5.1 Thematic Activity: Integrated Coastal Area Management (ICAM)

### 5.1.1 ICAM Legal Framework in Lebanon

As formerly cited, Lebanon requires a regulatory frame to appropriately manage and preserve the coastal resources of Lebanon. Furthermore, the overlapping among the public institutional responsibilities generates complications towards identifying the main entity charged of overseeing these resources. Hence, it was an imperative measure to carry out this legal assignment, with the assistance of two national lawyers.

One should mention as well that the Lebanese coastal area does not possess yet a clear definition of its boundaries. For the purpose of drafting the legal framework, the definition becomes a must. As a result, an on-line communication was launched for almost two months of time, and this among national experts (individuals and firms) to reach a consensus on a common coastal area definition. A similar process was applied to the legal text that was circulated to a wide range of scientific, academic, institutional and legal experts as well as non-governmental organisations to comment and agree on the legal text contents. Such essays based on exchange of views and information set the basis for a solid ownership and lobbying towards the activation of the legal framework.

**It is now the responsibility of the Ministry of Environment to submit the legal framework to the Council of Ministers for approval.**

**Photo 6:**
**Sarafand archaeological mound**

### 5.1.2 ICAM National Strategy

The Lebanese coastal area is a vital socio-economic region that necessitates particular planning and management in the short, medium and long term. Accordingly, the elaboration of a National Strategy directed at the coastal area becomes a necessity. The proposed strategy includes an overview of the socio-economic, environment and infrastructure situation of the coastal area. Short-, medium- and long-term actions were projected.

**It is expected that the Ministry of Environment will submit soon the ICAM National Strategy to the Council of Ministers for approval.**

### 5.1.3 Land-use Management

The following sub-activity was regarded as the central skeleton for the CAMP overall activities and sub-activities all throughout the project implementation. Playing the role of CAMP database that fed the other experts with the required information, this activity has embraced data on urban planning, infrastructure, socio-economic issues, agriculture as well as other available and generated facts and figures. The outputs of this activity included an extensive report about CAMP area in general, and the three municipalities in specific; it comprises comparative studies, maps and figures between the pre-war era and the current year. Several informative sessions and seminars were organised at the local level to explain the importance of sound urban management (based on international success stories), expose and discuss the national regulatory framework for urban planning, the role of Directorate General of Urban Planning (DGUP), in addition to the importance of establishing a local urban database that would ultimately serve as a tool to control and normalise municipal administrative and financial procedures. Several constraints faced this sub-activity in particular, mainly related to the need for maps to achieve the required objectives of the sub-activity.

In parallel to what was required in the Terms of Reference (ToRs), an attempt was made jointly by the CAMP urban planner and CAMP office to review and update the terms of the bidding document that is presently adopted by the Directorate General of Urban Planning (DGUP) for the implementation of regional and local master plans for land-use management. Initially, the bidding document was limited to strict urban planning parameters, without any consideration for sustainable development criteria. The proposed new document tried to meet all the requirements and concerns that would lead to establish feasible and sustainable coastal area in Lebanon.

**The Ministry of Environment, and in close collaboration with DGUP, shall:**

- **Adopt the newly proposed bidding document for land-use management;**
- **Enact decisions to fully protect and preserve coastal agricultural plains against constructions;**
- **Enact decisions to fully protect and preserve areas and landscape of natural, cultural, historical and archaeological significance from any type of construction;**
- **Organize further informative workshops at level of municipalities or confederations of municipalities, to explain the importance of urban master plans in the context of coastal resource conservation;**
- **Design and disseminate a booklet on sustainable practices of land-use management, based on CAMP outputs.**

### 5.1.4 Cultural Heritage

Cultural heritage as a sub-thematic activity might be deemed as one of the strongest advantages of CAMP. Indeed, and for the first time, heritage takes part in such project that is meant originally to focus on environment, and particularly on the resources conservation. This activity endorsed considering the cultural heritage and historical assets as elements of identical significance to natural resources, if a country wants to reach a sustainable coastal development.

Within this activity, the national team in charge of this sub-activity transferred knowledge and exposed the current situation of the cultural heritage at both CAMP and municipalities levels. Several awareness meetings coupled with field visits were organised to the local communities. Also, and to ensure further consciousness, a booklet on the importance of cultural heritage in promoting sustainable development was prepared in both English and Arabic language.

In an attempt to save one of the important archaeological sites in CAMP area, and based on a personal initiative, the national team prepared an integrated dossier on Oumm Al-Amad site (in Naqoura) and was submitted to the One Hundred Monument Funds. At the end of year 2003, the site was nominated.

It is to note that this sub-activity was meant first to be implemented as a separate thematic activity managed and funded by the 100 Historic Sites. The shortage of funds within this Regional Centre pressed the PAP/RAC to assume dealing with the expenses of this activity, based on the request of CAMP Office.

**As a follow-up to the sub-activity's outputs, the Ministry of Environment and in co-ordination with the Directorate of Antiquities shall:**

- **Seek funding to print and disseminate the booklet "Cultural heritage and sustainable development";**
- **Protect and seek funding to rehabilitate Oumm Al-Amad, as a result to the site nomination;**
- **Protect Naqoura coast and Bay as a national natural heritage;**
- **Convert the Damour silk factory into a national silk museum;**
- **Protect and rehabilitate the remaining coastal heritage sites.**

### 5.1.5 Socio-economic Analysis

The socio-economic report highlights complementary features to environment, land-use planning and resource conservation, i.e., the social and economical aspects of the Lebanese coastal area. Without studying this last facet, the first component remains unsatisfactory and incapable to attain sustainable conservation, development and management of the coast.

The expert started his report by revealing the history of the Lebanese coastal area from an economic point of view, the different models of traditional development, as well as the evolution of the coastal area throughout the twenty's century, concluding with the impact of the war on the anarchic development and coastal resource degradation. The expert continued by describing the state of the environment from a socio-economic point of view, focusing mainly on issues that are hindering a balanced coastal economic growth, such as the fast and uncontrolled urban expansion, the agriculture sector threatened by the urban sprawl, the weak industrial structure, the segmentation of the tourism sector, and finally, the coastal heritage which is slowly disappearing whether it is natural, cultural, archaeological, and landscape heritage. After an overview of the CAMP area followed by a description for the socio-economic features of Damour, Naqoura and Sarafand, the report pointed out to the municipalities' competences, especially those that could help to induce municipal economic returns. The report concluded by a set of strategic choices and actions.

The importance of this report lies in the highlighting of how the conservation of coastal resources could contribute to halt rural immigration, create job opportunities in the sectors of alternative tourism and agriculture, increase municipal funds, etc.

**The Ministry of Environment, and in collaboration and co-ordination with the Ministry of Transport and Public Works, as well as CDR, shall conserve areas endowed with comparative advantages at sub-regional, regional and national levels. These advantages could be of natural, agricultural, landscape, cultural and/or ecological nature.**

**The Ministry of Environment shall increase capacity building programmes underlining the value of and correlation between nature conservation and socio-economic attribute. The Ministry should also stress upon the socio-economic aspects when designing and implementing environmental projects targeting the coastal area.**

**The Municipalities shall be informed and empowered on the best means to increase municipal returns through increase conservation of coastal resources.**

### 5.1.6 Environment, Agriculture and Fishery

The decision to implement this sub-thematic activity came out during the implementation phase of CAMP Project, when the gap was noticed in the shortage of information about environment, fishery and agriculture to enable the team to acquire the inclusive representation of the coastal area, and subsequently, to conceive and implement a comprehensive strategy for sustainable coastal management. As the title indicates, the report is divided into three parts; each of these parts tackles CAMP area in addition to the three municipalities.

To compile the necessary data, the first activities carried out by the team were in organising workshops based on PRA techniques targeting the communities of farmers, fishermen, as well as representatives of the local communities. The aims of these workshops were to enquire the participants about their opinions, constraints and visions regarding the sectors of agriculture and fishery in addition to the environment situation.

The recommendations resulting from this sub-activity confirm those resulting from the main thematic activities, such as the Integrated Water Resource Management (IWRM), Tourism and Sustainable Development, Integrated Coastal Area Management (ICAM), and others. Most importantly, these recommendations reflect the crucial role that shall play, both individually and jointly, the Ministry of Environment, Ministry of Agriculture, Ministry of Transport and Public Works, Council for Development and Reconstruction, and other public entities to halt the increasing coastal degradation and save the remaining ecological, agricultural and fishery assets of the country.

**The coastal area is in urgent need, on the short term, to:**

- **Promulgate the legal text for Integrated Coastal Area Management (ICAM) in Lebanon;**
- **Enact regulatory and legal texts to protect and preserve agricultural and natural sensitive areas, including beaches, promontories, bays, plains, river mouths, etc.;**
- **Establish adequate wastewater treatment plants;**
- **Establish adequate solid waste management mechanisms and procedures;**
- **Regulate the pesticide application and irrigating water to protect water resources from pollution;**
- **Conserve the fish communities from further depletion through series of actions targeting (1) legal enforcement, (2) increasing awareness of fishermen, (3) upgrading fishermen equipment, locations and social status, and (4) research and monitoring.**

### 5.1.7 Assessment of Environmental Violations on Damour River

A qualitative assessment on the Damour River was carried out at two phases. The objectives of these assessments were to identify the major violations occurring on the Damour River resources, at two different times of the project implementation. The results obtained from the two reports were meant to serve as basis for the suggested Master plan of the Damour River Basin.

**The Ministry of Environment shall, in close co-ordination with the Ministry of Energy and Water, the Water Authorities and the municipalities, carry out a quantitative and qualitative survey on the Damour River, from source to outfall.**

**The same activity should be implemented on all coastal rivers, mainly Litani River, Nahr Al-Kalb River and Al-Awali.**

**Photo 7:**
**Damour river**

### 5.1.8 Master Plan for Damour River Basin

The following sub-activity aimed to formulate the first master plan for river basin management in Lebanon. Damour River was selected to be the case study due to the importance of this river within CAMP. Accordingly, the technical Terms of Reference (ToRs) were prepared in Arabic and submitted to the Ministry of Environment that was expected to finance this initiative as part of the government cash contribution towards CAMP. However, despite the significance of such a study at the national level, the bidding process was still not carried out.

**The Ministry of Environment shall implement the activity related to carrying out the Master plan for Damour River Basin. This is a crucial first step forward to ensure river basins' management all over the national territory.**

## 5.2 Thematic Activity: Tourism and Sustainable Development

In this thematic activity, alternative tourism assets were highlighted. Infrastructure and superstructure were assessed at the level of the three municipalities.

To disseminate knowledge about sustainable tourism significance in the livelihood of coastal citizens, informative sessions and field trips were organised in collaboration with the Participatory Programme thematic activity. Finally, a set of 150 photo-slides were prepared and provided to the Ministry of Environment and the three municipalities.

Results and recommendations of this activity were a basis for a private firm, which developed the Oceana project in co-operation with the Damour municipality. The project is based on a soft construction on the beach in the Damour plain, where simple facilities for tourists will be developed, as well as possibilities to sell local products. An inauguration ceremony took place in Damour 24 March 2004 were the project was presented to many stakeholders, and media covered the event very well.

It was for the first time in Damour that this sort of partnership was developed, and it is also important for MAP CAMP projects because even before the formal conclusion of this specific project, lots of interest has been shown from various entities to use its results.

**The Ministry of Environment, and in collaboration with the concerned institutions, shall:**

- **Promote the sustainable coastal tourism concept and products;**
- **Protect the Damour River Plain against all types of construction;**
- **Declare the Naqoura Bay and Coast as area of special importance at national and Mediterranean level;**
- **Carry out specialized training courses to coastal communities having special sustainable tourism assets;**
- **Encourage NGO funding for sustainable coastal tourism.**

## 5.3 Thematic Activity: Integrated Water Resource Management (IWRM)

Integrated Water Resource Management (IWRM) was very significant at different facets: first, by implementing a diagnostic analysis of the water status (surface and groundwater) at the level of CAMP and three municipalities; second, by introducing IWRM concept in municipalities; third, through playing a catalytic role while ensuring co-ordination and establishing dialogue between the multitudes of stakeholders concerned by water management.

The activity report is divided into several sections:

- general overview on the water sector in Lebanon;
- detailed study of water sector in CAMP area;
- detailed study of water sector in each of Damour, Sarafand and Damour;
- IWRM in Lebanon; and
- recommendations and conclusions.

Finally, the IWRM team prepared an awareness brochure on the importance of water conservation in Arabic.

It is worth noting that this activity witnessed, at certain stage of field work, the involvement of some university students from the local communities in compiling data on water use in households and agriculture sector.

## 5.4 Thematic Activity: Systemic and Prospective Sustainability Analysis (SPSA)

First of all, it is important to point out that the Systemic and Prospective Sustainability Analysis (SPSA) thematic activity was carried out jointly with the Participatory Programme thematic activity. This decision was adopted together between CAMP Office and Blue Plan Centre due to the need of the participatory approach in implementing SPSA at local level, and reciprocally the importance of developing grassroots indicators for obtaining sound municipal development plans. The same NGO was in charge of carrying out both activities.

The importance of SPSA, which seemed at the beginning very complicated to be realised at local level, is that it facilitates introducing and elaborating sustainable indicators at the municipal

level, taking into consideration the coastal municipal specificities. SPSA was achieved over four main workshops; several experts and community sessions were held in between to choose, decide and finalise a set of sustainability indicators of significance at CAMP level. This activity involved CAMP municipalities, CAMP team of experts, national projects dealing with sustainable indicators, pool of national experts, NGOs, etc.

**The Ministry of Environment shall provide continuous assistance to CAMP municipalities in order to enable them using the sustainable indicators (SIs) for planning purposes.**

**Also, the Ministry shall elaborate further programmes and projects aiming at introducing and developing SIs in municipalities.**

**Photo 8:**
**SPSA Second workshop, 2003**

## 5.5 Thematic Activity: Data Management

The importance of this thematic activity was mostly noticed when geographical information was required to study the progress of the coastal area at the level of Sarafand and Naqoura, and to compare the land-use changes between today and last available maps. For that purpose, IKONOS maps (1/5,000) for both municipalities were purchased and ortho-rectified. Also, in the context of this activity, a comprehensive database on CAMP was put in place. This database includes all data whether available or developed within CAMP Project.

Despite the delays occurring to the implementation of this activity, the database will serve both the Ministry of Environment and the three municipalities in better planning and conserving coastal resources. Finally, CAMP project was not able to benefit from the entire budget allocated to this activity, due to budgetary restrictions that took place after the project commencement.

**The Ministry of Environment shall make public the use of CAMP database.**

**In addition, the Ministry shall co-ordinate with the Ministry of Interior and Municipal Affairs to introduce and disseminate about the importance of setting municipal databases and elaboration of digitized municipal land-use maps that would help in conserving coastal resources, enabling a better municipal management and achieving a sustainable coastal development.**

## 5.6 Thematic Activity: Public Participation

This activity is also one of the important corner stones of CAMP Lebanon. It is thought to be a reference also for future CAMP to be implemented around the Mediterranean. This thematic activity has several objectives: first, to increase awareness of local communities on coastal resources; second, to increase public involvement in planning and conservation of coastal resources; and third, to ensure the liaison between the technical outputs and local initiatives.

The implementation of such an activity was not as easy as it was thought to be at the beginning of the project. The reluctance of local authorities to work with central government and international entities, the weak co-operation and communication between the local authorities and their respective local authorities, the local authorities structure (municipal council operational on a volunteer basis), the lack of municipal development plans, and many other issues, made the work of the whole team (national and local co-ordination as well as technical experts) quite challenging and sometimes difficult.

**Photo 9:**
**Informative session about water resources in CAMP municipalities, Damour, 2003**

The activities carried out over one year of time included:

- Participatory Rural Appraisal sessions;
- implementation of Local Agendas and development of municipal development plans;
- capacity building programmes including proposal writing, and strategic planning;
- awareness raising activities including seminars, local meetings, field visits, etc.

**The Ministry of Environment, and in close collaboration with the Ministry of Interior and Municipal Affairs, as well as the Ministry of Social Affairs, shall introduce and promote the concept, mechanism and tools of the Local Agenda in municipalities, based on CAMP experience. Municipalities shall be empowered and assisted to draft municipal development plans that take into consideration the sustainability and rational use of coastal resources. Local communities shall constitute integral part of any developmental programme/project.**

**In addition, further environment and development programmes and projects shall be designed and implemented at municipal confederation levels. This is the only way to ensure programme/project ownership at local level and guarantee the sustainability of programme/project results.**

## 5.7 Thematic Activity: Marine Conservation Areas

The present thematic activity aims at observing and recording the biological diversity of two CAMP sites: Naqoura coast and sea; and Damour beach and river mouth. This would ultimately lead to the declaration of these sites as potential areas of special importance at both national and Mediterranean level.

The activities include:

- the inventorying the fauna and flora (sea, land, river);
- the preparation of visual support and documentation on sites diversity;
- the preparation of the necessary documents aiming at the declaration of the sites as areas of special importance; and
- the organisation of necessary awareness kits and workshops targeting the local communities to disseminate information about the significance of the selected sites.

Due to the several bidding processes carried out for this activity (the activity started in September 2003), the team of experts is still operational until the end of year 2004. This activity is highly important because it targets two sites not previously studied (team of experts did not found previous research papers and documentation in that regard) and which are thought to host significant fauna and flora.

**After CAMP phasing out, the Ministry of Environment shall continue in carrying out the thematic activity "Marine Conservation Areas" in Damour and Naqoura. Based on compiled data, the Damour Beach and River Mouth, as well as the Naqoura Coast and Beach shall be declared as areas of special importance at the national and Mediterranean level.**

**Similar initiatives shall be launched for the areas classified as sensitive hot spot areas of biological diversity, landscape and/or cultural value.**

**Photo 10, Photo 11: Awareness seminar and the field visit about cultural heritage**

# 6. Capacity Building Initiatives

Based on the needs identified to build the skills nationally, two training courses were organised: the first tackled the Carrying Capacity Assessment (CCA) of the tourism sector, while the second exposed the concept and components of the Integrated Coastal Area Management (ICAM). Both training courses were characterised by the variety of participants' background, representation and field of expertise. This matter created a highly interesting and interactive atmosphere. In fact, audience was composed of representatives of the national ministries, academic and scientific institutions, non-governmental organisations, local community representatives, CAMP expert, etc. At the end of both training courses, the participants requested further capacity building activities that evolve on sectoral issues related to Integrated Coastal Area Management (ICAM).

**Training Course on Carrying Capacity Assessment (CCA) for the Development of the Tourism Sector**

The training course was organised on February 7-8, 2003, at the premises of the Ministry of Environment. The training course explained the concept of sustainable development and CCA based on the "Guidelines for Carrying Capacity Assessment for Tourism in the Mediterranean Coastal Areas" and "A Guide for Good Practice in Tourism Carrying Capacity Assessment". The theoretical background has been completed by the additional indicators in order to present better the essence of the two PAP/RAC documents that can be summarised as: "*Sustainable tourism stands for the development within the limits of carrying capacity, achieving a compromise between the requirements of the development and the need to protect the non-renewable natural and social resources*".

Then, three case studies were presented: the island of Vis in Croatia, the island of Rhodes in Greece, and Marsa Matrouh in Egypt, as well as two CCA studies prepared by the local experts according to the PAP methodology (Malta Archipelago, and Rimini Province in Italy). The presentation included a special reference to different approaches to and differences among the destinations as the examples of the flexibility of the carrying capacity. The main stress was put on the fact that very often the social and political situation in the destination has greater influence on the definition of the carrying capacity than the measurable physical parameters of the environment.

The overall analysis stressed on the need to recognise the three groups of parameters (natural-ecological-infrastructure; socio-economic; and economic-political), and on a more intensive elaboration of the data playing the main role in the definition of the carrying capacity, which directly depends on the actual situation of the site. At the data synthesis stage, special attention has to be paid to land-use management (planning, existing and potential tourism projects, other development projects), and to the situation in the tourist market, i.e. the kind of tourist demand.

The definition of tourism development options as a crucial element of CCA according to PAP/RAC was elaborated mainly in the form of an exercise. Participants were divided into two groups, one taking the role of "developers" and the other of "ecologists". After two hours of work, the representatives of each working group presented their results, which were as follows:

- **"Developers":** Following the PAP methodology, this group worked on the relevant data available for a defined area focusing on building a five-star hotel resort between the old town of Sour and the beach as a tool which could upgrade the value of the whole area and prevent the beach area from deterioration. However, due to the local socio-cultural aspects, such development was not intended to be as intensive as it would be expected in

highly developed coastal resorts, and reserved for the local population a free access to most of the beach.

- **"Ecologists":** A similar procedure was adopted by the "Ecologists", but they did not include in their work the building of large hotel capacities and focused on the protection of the area. They also paid more attention to socio-cultural values of the area considering the needs of the local population. According to the proposal made by the group, the accommodation facilities were planned only in the area of the town of Sour, so that the local population and visitors from other parts of Lebanon could have a free access to the whole beach area.

In the discussion that followed, each group tried to convince the other of the justification for their proposal for and approach to sustainable tourism development. At the end of the discussion, the need for the assessment of the cultural impacts of tourism on the local population, and the need for the development of the whole area through developing tourism, which would be based on rich natural and socio-cultural resources (the town of Sour as an important historic town) was emphasised.

**ICAM Training**

A training course on Integrated Coastal Area Management was convened from October 8 to 10, 2003, at the premises of the Ministry of Environment. The training content was administered by CAMP national team and PAP/RAC.

The training was initiated by explaining the ICAM process that was defined as a continuous, proactive and adaptive process of resource management for environmentally sustainable development of coastal areas, based on multi-disciplinary approach, problem solving instead of problem transfer, stakeholder participation, as well as integration among sectors, institutions and administrative levels. Differences were highlighted between sectoral planning and ICAM, as well as between the unsustainable and sustainable development patterns to coastal resource use. The different stages followed to implement ICAM were exposed starting from initiation, to planning and ending with implementation.

The different ICAM management approaches were then introduced by illustrating the various coastal uses (recreation, conservation, urbanization, navigation, exploitation) and the potential conflicts that might arise from using the coastal resources. Key ICAM functions concerned with physical and spatial planning, conflict resolution as well as promotion of economic development were highlighted. The four key stages of the ICAM process (initiation, planning, implementation, monitoring and evaluation) were presented.

The coastal management was put into the decision-making context, in terms of how coastal systems are affected by cumulative impact of decisions, as well as the management requirements that involve many agencies at different governmental levels. The legal instruments for ICAM process implementation at the Mediterranean level were presented, specifically the Barcelona Convention, which is the main overall legal pre-requisite for successful ICAM. The presentation included the different legal instruments including the global conventions, charters, agreements, protocols in addition to the national laws and decrees as well as the sectoral legislation. The ICAM expertise and partnership was stressed upon in the context of the need to involve a team of multidisciplinary experts in the ICAM process, in co-ordination with all concerned stakeholders including national and local authorities, scientific communities, NGOs and individuals.

The first tool presented in the context of ICAM tools was the Strategic Environmental Assessment (SEA), which was defined as a comprehensive and participative evaluation process

of the potential environmental impacts of a proposed policy, plan or programme and its alternatives, and that introduces environmental considerations into decision making. The second ICAM tool was the legal framework, while the third tool was related to economic instruments and incentives. The fourth ICAM tool was related to data collection and management, and the fifth ICAM tool, which is the public participation stressed upon the importance and significance of increasing public participation in community development through access to information and resources, capacity building, and joint planning and implementation of environmental initiatives. The last tool was the capacity building that is considered crucial, especially when knowing that ICAM methodology of implementation is rather limited, the preparation of the national and local capacities for the implementation of ICAM process is the key element of its success.

The last training day addressed some case studies taken from CAMP Lebanon experience in some thematic areas. These cases were used as a basis for the formulation of working group sessions. These case studies tackled the tourism and sustainable development, urban planning, and, integrated water resource management.

# 7. Major Benefits of CAMP Lebanon

CAMP project has showed several benefits, both in its structure, methodology and major outputs. It also had some gaps that will be presented at a later stage of this report.

**Benefits from Structural Point of View**

CAMP Lebanon is the first national project that involved a close collaboration and co-ordination among several national and international entities. Indeed, the project team being composed of a National Co-ordinator, a team of experts composed of private sector and NGOs, several international technical centres, in addition to the Ministry of Environment Focal Point, this structure demonstrates a distinctive prospect of collaborative effort where each entity brings the best of experience and expertise.

Added to that, the involvement of local partners (local authorities and communities) was a distinguished and fruitful experience whereas a number of lessons learned were extracted. Finally, structuring the project into thematic themes had helped in better using the teams and activities outputs.

**Benefits from Methodological Point of View**

CAMP Project adopted a top-down and bottom-up approaches to achieve the identified objectives. This was not an easy task, knowing that such an initiative was not reported to be previously experienced by any of the team. Establishing trust and confidence in the municipalities towards the central government and international entities was a major challenge. On the other hand, the project followed major recommendations already set by previous studies (such as the Regional Environment Assessment Report of the Coastal Zone – CDR – 1997) and currently implemented projects (the most important is the National Land Use Planning (SDATL), a two-year project currently carried out by IAURIF- DAR AL-Handasah and commissioned by CDR).

The project included a diversity of activities to complement each other. These evolve on study analysis, field studies, awareness campaigns and capacity building components.

**Benefits from Outputs Point of View**

Due to the multiplicity and complexity of issues governing the coastal area, a set of outputs resulted from each of the thematic and sub-thematic activities. These achieved outputs are meant to assist the concerned national and local entities in achieving a sustainable coastal development. They could be divided into national and local outputs.

Major national outputs are:

- the preparation of a national ICAM Law;
- the preparation of a national ICAM Strategy;
- the preparation of an updated technical Terms of Reference (ToRs) for the elaboration of urban master plans;
- CAMP database;
- the execution of a national capacity building programme on issues relevant to ICAM principle and tools;
- the potential declaration of two sites as areas of special importance at the national level;
- the preparation of awareness tools (brochures, booklets, slides) that help to disseminate the ICAM concept.

Major regional outputs are:

- an extensive study of each municipality comprising socio-economic, land-use, water resources, environment, agriculture, fishery, and others;
- inventory of cultural heritage at each municipal level;
- a municipal database;
- Municipal development plans;
- implementation of Local Agendas;
- local capacity building programme;
- conservation of some sites of cultural, agricultural and / or landscape value.

It is not only that the results of CAMP will be used in its Follow-up stages after its formal conclusion. Results, analytical outputs, data, maps and proposed recommendations of various activities were used by national and local communities in developing their plans, concrete projects, various development proposals, community programmes and alike already during the project implementation. Among the most evident ones are the following:

- Land-use management sub-activity provided valuable inputs for the Directorate General of Urban Planning when preparing a document for the implementation of regional and local master plans.
- Within the Cultural heritage activity a dossier on a cultural heritage site in Naqoura was prepared and submitted to the One Hundred Monument Funds, and the site was already nominated.
- Results of the Tourism and Sustainable Development activity served as a basis for a private firm to develop the Oceana project in co-operation with the Damour municipality, where principles of eco-tourism will be put in practice, and where local farmers will have a chance to sell their products.
- Sarafand municipality (one of the three communities involved in CAMP) will prepare its development programme on the basis of CAMP outputs and recommendations.

In addition, different partnerships were developed throughout the implementation of CAMP, such as between local and national authorities, private sector, NGOs and municipalities and so on.

All this shows that CAMP Lebanon has produced a significant influence on the approaches and development in general of the Lebanese coastal areas, it has mobilise public at local level and made them aware of a plethora of coastal management issues, and media and publicity of actions made the project visible and assisted the process.

# 8. Identification of CAMP Lebanon Gaps

Despite the success of CAMP Lebanon at both national and local level, several gaps were identified. Among these, we name gaps in CAMP overall structure, institutional management, project time management and information availability. These gaps shall be reconsidered prior to the design, implementation and sustainability scheme of any future development projects, whether by the Ministry of Environment, MAP or the MAP Regional Activity Centres (RACs).

**Structural Gaps**

Despite the distinctiveness of the CAMP Lebanon composition in terms of team work composed of public sector, individual consultants and private firms, NGOs and MAP RACs and consultants, nevertheless the project experienced diverse inadequacies due to this structure.

First, at the level of the Ministry of Environment: The Ministry of Environment is equipped with a relatively restricted number of human resources that are burdened with loads of administrative issues. This matter impacted CAMP project as well. Indeed, the CAMP Focal Point at the Ministry is in charge of many national critical issues such as the quarries, the reforestation programme, etc., a matter that hindered the Focal Point from actively participating in CAMP activities, except in official meetings and conferences inaugurations. This would undeniably have a negative impact on the sustainability of the project after it phases out, as the linkage between the Ministry and the local communities, assured throughout the project by CAMP team, would probably discontinue. Moreover, the project outputs might not be wholly exploited, not for the reason that the Ministry staff is incapable of building upon CAMP results, but rather because of the overload they bear.

Second, at the level of team of consultants: As it was formerly cited, the team is entirely composed of private sector (individuals and firms) and NGOs, working among other consultancies on CAMP project thematic and sub-thematic activities. In other words, the team with the exception of the CAMP National Co-ordinator was not hired on a full time basis to work in CAMP. A good number of experts were not accessible when need arose to bring about a selected topic or issue in a one of the three municipalities. This factor had created difficulties, affected at some stages the quality and progress of the project activities and related outputs. On the other hand, evident delays happened when deliverables to be submitted. This had in turn postponed the closing of the project according to pre-identified time schedule. Such a project requiring work at national and local level, in need for research and field work, is incontestably better implemented with a full time-committed staff.

**Project Time Management Gaps**

CAMP Project started effectively in May 2002, instead of September 2001. This had left almost half of the time initially allocated to the project for implementing the designed activities.

**Information Availability**

Technical data is not frequently available for use even between public institutions. Even when these data exist, they are mostly outdated or estimations due to lack of exact data.

**Institutional Management Gap**

As previously mentioned, the country suffers from an overlapping in duties and responsibilities among the public institutions. This was experienced in many instances when sites required safeguarding or plans need reconsideration for a better and sustainable coastal development.

# 9. Post Project Activities

The most urgent activities to be followed up after CAMP Lebanon phase out are undeniably those activities that were not finalised during the project lifetime. They are the following:

- The submission of the ICAM Legal Framework to the Council of Ministers;
- The submission of the ICAM National Strategy to the Council of Ministers;
- The activities identified in the context of the "Marine Conservation Areas". This thematic activity is planned to conclude by the end of 2004. The expected major output is the declaration of Naqoura coast and marine area as well as Damour coast and river mouth as areas of special importance at both national and Mediterranean level;
- The implementation of the bidding process and study related to the Damour River Basin Management Plan. The bidding document was already prepared in Arabic language and submitted to the Ministry of Environment;
- The adoption of the newly proposed technical bidding document for implementing regional and municipal master plans for land-use management. CAMP Lebanon submitted a reviewed bidding document to the Ministry of Environment, with the hope that this document was sent to the DGUP for review and adoption instead of the existing one. The document was prepared in Arabic language;
- Oumm Al-A'mad is an archaeological site, which profile was submitted to the 100 Monument Fund for nomination as an area of global importance. The site being presently listed is, nevertheless, still undergoing massive abandonment, degradation and destruction. Although it is not of the Ministry of Environment jurisdiction to follow up this type of files, lobbying next to the Directorate of Antiquities for the protection of the cultural resources in general, and Oumm Al-A'mad in specific, is an integral part of the sustainable tourism concept that the Ministry is calling for implementation;
- The three municipalities are relatively in the process of designing or approving master plans for land-use management. The Ministry shall follow up on the wise design of the master plans before they are approved by DGUP.

Following to the proposals suggested by various stakeholders that participated in the different CAMP activities, other short- to medium-term post project activities are suggested:

**Thematic Component**

*Establishment of a national coastal zone centre*

The proposed centre shall play the role of a focal point for tackling technical sectoral issues, database reference, in addition to a capacity building hub. The centre shall promote public involvement and participation in managing and conserving coastal issues; for that purpose, participatory approach techniques shall be taught. Finally, the proposed centre is expected to backstop the central and local authorities in providing required human resource expertise.

*Coastal Area Management Programme – Phase II*

It is proposed to replicate CAMP Lebanon project in other areas of Lebanon, this time by including cities from the northern coastal area. The current experience will enable applying the lessons learned and better restructuring the project configuration. The project shall include studying four coastal towns, in addition to the analysis of the northern coastal situation. The project duration shall not be less than three years.

*Integrated management of the Damour river basin*

In an attempt to establish integrated river basin management, and as a result to the management plan study to be carried out by the Ministry of Environment, the proposed project shall target some of the project outputs. A major activity shall be to put in place and activate the water basin committee.

*Integrated management of the Litani river basin*

The Litani River is one of the major rivers that lack adequate management. Initiating a Master plan for Litani River basin management shall be the start and the purpose of this project.

*Sustainable tourism in Lebanese coastal areas*

Tourism is a main economic sector not only in the coastal area but all over the Lebanese territory. Based on CAMP studies, it was revealed the particularity of the tourism products of the coastal area, and most of all the sustainable tourism produce, whether culture, nature or landscape. The proposed project shall formulate a national coastal management plan in addition to a national coastal marketing scheme. As case studies a maximum of four coastal towns shall be in-depth studies. Close collaboration with local authorities and communities shall be ensured. The project overall duration shall be of three years.

**Capacity Building Component**

*Building the capacity of national government in applying ICAM*

The proposed project aims at upgrading the skills of the ministries concerned by the management of coastal area in issues related to ICAM tools. A series of training shall tackle each of these tools separately.

*Upgrading the fishermen capacities towards reaching a wise use of marine resources*

The proposed project aims at developing the skills of fishermen and changing their fishing habits in order to conserve the fishing habitats and communities. The training shall include the latest fishing techniques and practices, description of threatened and endangered marine species, ratified international conventions, and, the economic importance of resource conservation. The training shall tackle all Lebanese fishermen syndicates.

*Introducing wise agricultural practices in Lebanese coastal areas*

The Lebanese coastal area includes several coastal agricultural plains and plots that are not well managed from economical, environmental and financial points of view. The proposed project aims at conserving these agricultural plains and plots due to their economic, cultural and landscape values. The farmers shall be trained on new agricultural techniques (per type of crop or cultivation), pesticides and fertilisers application, irrigation techniques, and economic value for conserving agriculture.

# 10. Funding Opportunities

During the project implementation, several project proposals were drafted jointly with private firms and NGOs as an attempt to ensure sustainability of the project. These proposals were the following:

- In the year 2002, a project proposal was submitted to EC-LIFE Third Countries, jointly with the Association for Forest Development and Conservation (AFDC). The proposal aimed at expanding the scope of work within the municipalities of CAMP to include further municipalities. It also aimed at establishing a coastal area management centre;
- In the year 2003, the municipality of Damour and the Damour River basin were included within a project proposal drafted jointly with Creative Associate Company and submitted to the United States Agency International Development (USAID). The project aimed at promoting ecotourism based on CAMP results;
- In the end of 2003, the municipalities of Sarafand and Naqoura in addition to other coastal areas in CAMP were included within the proposal submitted by the Hariri Foundation to Council for Development and Reconstruction. The project "Community Development Project" is funded by the World Bank. Results of the bidding are not available yet.

Currently, the Damour municipality is in the process of planning an ecotourism project in Damour beach and village. The project will be co-financed by René Mouawad Foundation and a private firm. The inauguration of the project is expected to take place in April 2004 according to the Damour Mayor.

Building partnership between the Ministry of Environment and other institutions, such as ministries, NGOs, academic institutions or private firms is highly recommended to achieve the proposed projects. Due to the limitations in Ministry's staff and resources, these partnerships could take full advantage of the project experience and outputs for the benefits of all partners.

There is a number of national and international funding sources that could be potentially contacted to fund the previously mentioned projects. Among these sources, we can name:

- The Mediterranean Action Plan (MAP);
- The EC-LIFE THIRD Countries; and
- The World Bank.

At the national level, these proposals could be submitted to many entities, most of these are international entities based in Lebanon. Among these opportunities, we can name:

- European Commission;
- United States Agency International Development (USAID);
- French Agency for the Development (AFD);
- Embassies such as those of Italy, Germany, Canada, Australia, etc.; and
- Hanns Seidel Foundation, German agency funding projects related to environment and development.

# 11. Conclusions

CAMP Lebanon experience was indubitably for all who were involved in the project an incessant practice and knowledge, which drawn lessons learned merit to be reproduced. The whole project combination starting from the description of a segment of the coastal zone situation, the relationship between central and local authorities, the connection between local authorities and their local communities, and ending with the experience of fully involving the private sector and NGOs in carrying out the activities, etc., have provided a new picture of the environmental projects in Lebanon.

Attained outputs require follow-up and implementation. Each thematic activity aimed through the set of recommendations to contribute to a better coastal planning and resource conservation. Most of these recommendations were drawn from the various workshops based on working groups involving represented ministries, institutions, academics, NGOs, local authorities, local community groups, and even individuals.

The most important elements of CAMP Lebanon are developed and articulated into a National Strategy for Integrated Coastal Area Management. CAMP Lebanon project developed a crucial legal tool, which is the proposed law on Integrated Coastal Area Management. The delegation of authorities to manage and co-ordinate issues related to coastal area management was provided to the Higher Council of the Environment. On a further local stage, these recommendations were translated into municipal development plans. Economic incentives shall be put into place to encourage practices aiming at halting further degradation. Municipalities shall be further empowered to better carry out their duties related to conservation of coastal resources. Moreover, local community groups shall be empowered and involved in understanding and planning for coastal resource conservation. Based on repetitive demands from the different stakeholders involved in CAMP Lebanon, capacity building programmes shall be developed to meet the needs of specific and general stakeholders. Most importantly, information sharing and availability shall be ensured. This has to be met through the activation of the CAMP web page, distribution of CAMP studies to concerned institutions and media involvement. The updating of CAMP Lebanon database is frequently necessary. Land-use planning and management shall be more based on GIS tools. The respective thematic and sub-thematic results are recapitulated in the Part II of this document.

# Part II:
# Summary of Thematic and Sub-Thematic Reports

# ICAM Legal Framework:
# Proposed Law on Integrated Coastal Area Management in Lebanon

As Lebanon still lacks a legal framework for managing, conserving and rationally exploiting the coastal resources, the proposed law was drafted and submitted to the Ministry of Environment.

**Chapter One**

The first Chapter includes basic principles and general clauses. Article one sets a clear definition and boundaries for the Lebanese coastal area, as follows:

- *Coastal area:* is the part of the Lebanese territory which includes the coastal waters and coastal lands, as defined within the clauses of the present law.
- Coastal waters: are the territorial waters extending until 12 nautical miles starting from the lowest water point. They include also the rivers' tributaries and wetlands as well as all water bodies and resources.
- *Coastal territories:* are the lands adjacent to the sea, starting from the public maritime domains and extending inland to an altitude of 250 m above sea level. The area includes the rivers and their tributaries, wetlands as well as all water bodies. Considered elements of the coastal territories are the municipalities which boundaries are included within the area, whether totally or partially, included in the coastal territories as determined by the present law.
- *Integrated Management:* is the management of the resources of the coastal zone which takes into consideration the sustainable economic and social development of the coast, as well as the biological and ecological balances.
- *Strategic Environmental Assessment:* is the methodology which objective is to integrate the environmental, economical and social criteria into the decision-making process, during the study of propositions, planning, programming and decision making. It is applicable to laws, policies, programmes, general plans which could lead to the execution of projects, works, constructions and investments having an impact on the state of the environment and the sustainability of the natural resources.
- *Hydraulic resources:* are the waters comprised in the coastal territories, whether they are surface or ground waters, including the natural waters and artificial water pipes as well as treated waste waters.
- *Surface waters:* are the waters which flow on the surface, including water pipes, seasonal and permanent rivers, artificial water pipes, wetlands and treated waste waters.
- *Hydraulic basin:* is every region falling within the coastal zone boundaries, and which consists of hydraulic resources forming an integral unit, in a way that every economic or social activity or any water deviation would have an impact on the water availability.

Article two delimitates the general legal framework for the management of the Lebanese coastal area, and with the objectives to introduce the principles and mechanisms aiming:

- to ensure a global and sustainable management of the coastal area, as well as basins, hydraulic resources and surface waters;
- to protect the marine environment, the coastal zones, the basins, the hydraulic and natural resources and the surface waters against all types of pollution;
- to protect and develop the natural sites and landscapes, marine and terrestrial, having ecological and / or heritage value;
- to ensure the co-ordination among the public ministries and administrations, as well as between the ministries and administrations on one hand and the civil society in all its components on the other hand, in order to achieve the above-mentioned objectives.

**Chapter Two**

The second chapter sets the basis for the institutional management of the Coastal Area of Lebanon. To avoid the constitution of an additional higher council to the existing councils already formed in the country, supplementary tasks were attributed to the proposed Higher Council of the Environment, which was created by law No. 444 (2002) within the Law for the Environment. These tasks are the following:

- to watch over the preservation and management of coastal area and river basins;
- to preserve the natural sites and the ecological balance of the coastal zone and river basins;
- to establish general policies that go along with the above-mentioned objectives;
- to ensure co-ordination among ministries, public administrations, organisations and various authorities in charge of managing and watching over the protection of coastal area and river basins;
- to ensure the application of the clauses of the present law, including monitoring and controlling of regulations and measures applied by the various administrations, the public establishments, the municipalities and municipalities confederations. To achieve this goal and the co-ordination task, the Council has the right to appeal to the Department of nature conservation at the Ministry of Environment.

Article four defined the prerogatives that the Council possesses, and which are:

- to submit propositions and recommendations to the competent authorities as well as to public and private authorities;
- to request, gather and co-ordinate information to the various competent authorities;
- to participate to the establishment of a master plan that concerns any zone comprised within the boundaries of the coastal zone and river basins;
- to implement a Strategic Environmental, Social and Economic Assessment related to the regulations and decisions pertaining to the coastal area and / or river basins prior to their adoption;
- to appeal to judiciary and administrative jurisdictions and to file a civil action in order to end any act, project or measure having an adverse impact on the coastal areas and / or river basins or likely to contravene to the dispositions of the present law;
- to settle any competence conflict between ministries and public administrations concerned by the coastal area and river basin management.

The fifth Article states that the Council has to elaborate an annual report to be submitted to the Council of Ministers, and this before the end of August of the year. The report shall include all the activities and achievements carried out by the Council. It also describes the coastal area in all its aspects and proposed general policies to be followed up and effective measures to be executed.

**Chapter Three**

The third chapter focuses on the divisions and plans of the coastal area. In this respect, and within 2 years of time starting from the date of publication of the present law, the Council shall elaborate an Integrated Coastal Area Management Plan which objective is to preserve the coastal area and ensure its sustainable development. This Plan shall be revised every five years, and in case of unexpected natural, economic and legal / or appearances.

Article seven divides the Coastal Area into departments that take into account the ecological, economic and social balances in addition to the specificity of each department and its extension and linkages with the other departments. The coastal area division is defined through a decree enacted by the Council of Ministers, upon the Council's suggestion.

Proper plans to each of the identified departments are set, based on the elaboration and publication of a complete inventory of the economic establishments and natural, historical and cultural surfaces of the coastal area. These plans shall clearly indicate the environmental and ecological features of their respective areas.

Municipalities comprised within the boundaries of the coastal zones are requested to execute their management plans. In case of conflict between the plans of the departments and those set by the non-executed general master plans, the first plans take precedence over the second plans.

Article ten identifies the minimum items that shall be included within the Integrated Coastal Area Management Plan. These points are:

- delimitation of the coastal zone boundaries;
- delimitation of the zone comprised within the proposed plan;
- identification of the general policy upon which is based the plan;
- determination of the sites to be protected or developed;
- determination of places susceptible of being transformed into waste treatment sites;
- restrictions that should be applied within the boundaries of the coastal area and river basins, either to the area itself or to the available industrial, agricultural, touristic and recreational activities;
- national global policies and plans to be adopted to preserve, develop and utilise the hydraulic resources and river basins;
- practical measures adopted to enhance and protect the usage of surface waters, and re-charging the aquifers with waters;
- questions that concern any conflict between diverse official administrations concerned with the preservation of the coast, its usage or the development and the treatment modalities;
- additional questions identified by the Council.

When elaborating the Integrated Coastal Area Management Plan, the following parameters are taken into account:

- the administrative subdivisions;
- the present and future usage of the coastal waters and lands within the limits of applied laws, decrees and regulations;
- the implementation of river basins and their current usage;
- the economic and ecological considerations;
- the development plans related to the different national departments in a manner that contradict the overall plans.

Article eleven gives the Council the power to declare some areas comprised within the limits of the coastal area as area / zone necessitating special protection if the area / zone presents an ecological and / or natural and / or agricultural and / or cultural and / or historical significance, whether at national or Mediterranean or global level.

**Chapter Four**

The fourth chapter emphasised on the protection of the Lebanese coastal area. For that purpose, a band of two-hundred meters is created starting from the highest level of seawaters in winter; within this band, it is not allowed to construct.

Article fourteen enables the Council to impose restrictions on the industrial, agricultural, touristic and other productive activities within the coastal area. The Council would put into place restrictions and measures proper to the following questions:

- fishing and diving activities;
- recreational harbours;
- sport and leisure activities inside the coastal area and river basins;
- vehicle parking.

Most importantly, Article fifteen allows a free public access to the beach and public maritime domains.

**Chapter Five**

The hydraulic resources, whether ground or surface waters, sea or river waters, constitute an integrated part of the coastal zone resources that should not be polluted, depleted, deviated or modified in their mode of usage.

Article eighteen enables the protection of the cultural, historical and architectural heritage of the coastal area. This heritage shall be protected and preserved against any destruction, depletion, and utilisation whether totally or partially for construction purposes.

On the other hand, Article nineteen forbids any disposal of solid, liquid, medical or toxic wastes in all its forms into the coastal waters and lands, prior to their treatment in conformity to the regional and international ratified conventions and agreements. Polluting entities should pay indemnities in conformity with the "Polluter Pays Principle". Article twenty forbids the establishment of solid or liquid waste treatment plants in areas enjoying natural, ecological, historical, cultural, agricultural or touristic significance.

Article twenty-one provides to the council the power to elaborate an adequate regime for the protection of coastal waters against pollution resulting from shipping oil spills inside the Lebanese territorial waters. Article twenty-two provides to the Council the task to draw up a list of fauna and flora, whether of marine, terrestrial, or river origin, that are present in the coastal area and river basin, that are threatened of extinction and / or necessitating particular protection.

The Ministry of Environment and the Higher Council are requested to inform regularly the public of all the master plans and regulations that are special to the coastal area prior to their promulgation.

**Chapter Six**

The last chapter was dedicated to sanctions and penalties.

# National Strategy for Integrated Coastal Area Management

## Purpose of the Strategy

This document provides guidance to decision-makers concerned with the management of the Lebanese coastal area, with the purpose of planning, setting and elaborating programmes and policies seeking a rational conservation of coastal zone resources, upgrading the living standards of coastal inhabitants and introducing economic actions that value coastal assets.

The Strategy ascertains principles that are to support executive means aiming at ensuring human rights of both present and future generations in order to wisely utilise and enjoy coastal resources. It emphasises on adopting and applying Integrated Coastal Area Management (ICAM) principles to achieve the sustainable development of the Lebanese coast. It finally integrates the three pillars of sustainable development: economy, environment and culture.

The Strategy is a policy framework that sheds light on the Lebanese commitments towards internationally ratified conventions, and more specifically on the Barcelona Convention and its related Protocols. Being signatory among other treaties to the Biodiversity Convention, the Ramsar Convention, and the World Heritage Convention, the Strategy provides guidance and emphasises on the importance of putting into practice the provisions of such Conventions which are of high significance to the sustainability of coastal areas.

The necessity for developing a national ICAM Strategy framework arises following the disquieting situation facing the Lebanese coastal area today: overlapping of institutional competences, weak legal enforcement, over-exploitation of coastal resources, changes in coastal land morphology, in addition to important rates of exodus and immigration, are all factors that call for the existence of a nation-wide policy framework that regulates uses in the coastal area.

The Strategy begins with a vision statement of how Lebanese citizens would like to witness their coastal area in the next decade. It delineates coastal boundaries, and highlights in a diagnosis the coastal area economical, social, cultural and environmental significance and management issues. To enable a practical use of the Strategy and facilitate the vision becoming a reality, recommendations at short, medium and long term are made.

The proposed Strategy calls for the following overarching national policy priorities for coastal zones:

- enforcing legal and regulatory instruments aiming at guaranteeing the sustainability of social, economic, leisure and environmental values of coastal areas;
- preserving and valuing the natural, cultural and landscape heritage as a mean to upgrade socio-economic conditions;
- adopting and applying the concept of Integrated Coastal Area Management (ICAM), both at coastal and catchment area levels;
- preserving and valuing the coastal and marine biodiversity;
- empowering local authorities and civil society to contribute to coastal resources protection;

- increasing dialogue and communication processes through information sharing and increasing awareness.

The Strategy shall be reviewed and updated every five years in order to improve its implementation.

## Definition of National Coastal Area Boundaries

Decree 144 (1925) declares that the coast is delineated by the highest waterline during the winter months, including sand and gravel beaches. Considered part of Lebanon's maritime domain, the territorial sea extends 12 nautical miles from the coastline. The public maritime domain consists of the sea- including the sea bed and the sea floor and the coast[13].

Due to the lack within this definition of clear inland and offshore boundaries for coastal area *per se*, the proposed law for Integrated Coastal Area Management of Lebanon[14] provides a new definition that would take into account both boundaries. Article 1 states that:

"…

- *Coastal area: is the part of the Lebanese territory which includes coastal waters and coastal territories;*
- *Coastal waters are the territorial waters extending up to 12 nautical miles starting from the lowest waterline. They include also the rivers tributaries and wetlands as well as all water bodies and resources;*
- *Coastal territories are the lands adjacent to the sea, starting from the public maritime domain and extending inland to an altitude of 250m above sea level. The area includes the rivers and their tributaries, wetlands as well as all water bodies. Considered elements of the coastal territories are the municipalities which boundaries are included within the area, whether totally or partially."*

## Vision for the Lebanese Coastal Area

The following vision portrays the Lebanese society hopes for its coastal area. Enclosing the personal visions of the CAMP team, the global vision states that:

- At the horizon of 2030, coastal area boundaries are well defined and managed accordingly. The Higher Council for the Environment, headed by the Ministry of Environment, is charged of managing the entirety of the coast based on the Code of the Environment and the legal text on Integrated Coastal Area Management.
- Central authorities closely co-ordinate and collaborate on common issues of benefit to the development and sustainable use of coastal resources.
- Municipalities gain from and practice an increasing autonomy which enables them promoting and better rationally investing in their coastal resources, in co-ordination with concerned ministries and institutions.
- Local communities are informed and sensitised on the economic, cultural, social and environmental significance of coastal areas.
- Laws and decrees were promulgated to serve an integrated management of coastal areas. Environmental impact assessment, strategic environmental assessment, public information access, sector management such as water protection, land-use management,

[13] Source: Regional Environmental Assessment Report of the Coastal Zone of Lebanon, ECODIT-IAURIF, CDR, 1997.

[14] Source: Proposed Law for Integrated Coastal Area Management, CAMP Project, Ministry of Environment, 2003.

cultural heritage protection are part of the legal texts that are enforced by concerned ministries and municipalities.

- International conventions and agreements are ratified, entered into force and applied. The contents of these conventions and agreements are disseminated to the wide public.
- Coastal five-year plans at national and regional levels are designed and implemented taking into consideration the growth and needs of coastal areas and their population. River basins are subject to management plans.
- The public maritime domain is restored and rehabilitated. Beaches are clean, public and free to access. Seawater is protected from all sources of pollution. People are able to swim without any fear of infections. Coastal waters, whether surface or underground, are uncontaminated.
- The regions of the Lebanese coastal zone, still not urbanised in 2003, are kept preserved against all kinds of constructions. All zones of exceptional interest are well protected and offer wide and diverse possibilities to developing ecotourism activities based on the valorisation of both the cultural and natural heritage. The most spectacular valleys and watersheds are protected against cement and pollution (visual, noise, environmental). Buffer zones to strictly protected areas are created and managed. The natural landscape scenery they offer is preserved and devoted to sustainable activities of agricultural and recreational values.
- Master urban plans are conceived and applied at national, regional and municipality levels. Traditional architectural buildings are classified, protected and restored. The urban density in the coastal zone is maintained according to levels that are compatible with the living standards of its inhabitants as well as the preservation of the natural landscape. Human settlements are clustered in zones defined for that purpose. Villages are managed while maintaining low urban densities, even in their centres. Towns are surrounded by green belts, whether natural or agricultural, which extend from beaches to the first inland hills, as was the case all along the passed decades.
- Almost all Projected economic activities are developed with the main goal to provide job opportunities to the local population. Industrial, agricultural and recreational activities are conceived in a way that allows a sustainable development and perpetuation of natural resources. They reflect the interest of present and future generations.
- The private sector becomes further aware of the economic importance to protecting coastal resources.
- Alternative tourism becomes a major national services demanded by both Lebanese and foreign tourists. Central government becomes more involved in multiplying efforts aiming at promoting investments in the alternative tourism sector provided these investments are environmentally friendly and create employment opportunities for the local populations.
- Industrial activity is relocated in specially managed industrial sites outside residential, agricultural, natural and touristic areas. Industries respect environmental standards, care about the well-being of their workers and the surrounding environment. The agro-food industry is recognised as one of the major national comparative advantages; the sector attracts investments and provides qualified job opportunities to the inhabitants of coastal areas.
- The fishery sector is a major exporting economic activity. Fishing products are marketed according to national and international standards. Fishermen are well equipped and trained. They are provided with their social security rights.

- Public transportation systems are well developed. They are designed and executed without negatively affecting the landscape neither the agricultural potential of the coast. The level of air pollution will be maintained according to internationally acceptable standards.

## Coastal Zone Diagnosis Overview

The following section provides a comprehensive understanding of the present situation in the coastal zone. This will serve as the knowledge basis upon which ICAM policy objectives are to be drawn.

### General Context

The Lebanese coastline extends over 210 km starting from Naqoura at the Southern border and extending until the Al-Kabeer River in the North, at the border with Syria.

The coast is both the richest and most sensitive zone in the country[15]. It is an area where are concentrated the mass of industrial, commercial and financial activities as well as the major Lebanese cities. Within a 500-meter wide stretch all along the coast, urban areas occupy between 33% and 40%[16] of the total area, agriculture 41% and 19%[17] of natural areas such beaches and dunes. It is estimated that the coastal area is inhabited by 2.51 million people equivalent to more than 70% of the total Lebanese population and contributes to about 73% of Lebanon's GDP[18].

Lack of control and law enforcement has encouraged economic stakeholders as well as the population to undertake illegal actions such as building without permit, laying down outfalls without treatment, encroaching on public maritime domains, and other actions that resulted in a continuously increasing stress on coastal resources, being cultural, natural or economical assets. In addition, the lack of institutional organization has greatly affected the economic potential, especially the tourism sector that is considered the main national economic driving activity.

A need to overcome such problems calls for a consistent co-ordination among national and local institutions, encouraging local decentralisation, providing green economic incentives and finally increasing public awareness on ICAM importance.

### Regulatory, Legislative and Institutional Context

The present regulatory and legislative tools in Lebanon, including those affecting coastal areas in the context of, among other issues, urban management, tourism management and resource conservation, are old and outdated. A framework law for an integrated coastal zone management is still lacking, being so far substituted by ministerial decisions promulgated to regulate sectoral issues such as solid waste management and quarries.

Since 1995, several legal texts and decrees were proposed to the Council of Ministers for approval. Such texts address for example Environmental Impact Assessment (EIA), the management of protected areas, and hunting. They are not adopted yet. In parallel, the Ministry of Environment submitted a National Strategy framework to the Cabinet of Ministers for its

[15] Schéma d'Aménagement du Territoire Libanais, Phase 1, Diagnostic et Problématiques, Dar al Handasah- IAURIF, CDR, 2002.

[16] Figures vary according to available references.

[17] Idem.

[18] Lebanon State of the Environment Report, Ministry of Environment (2002).

endorsement. This Strategy which tackles among other issues coastal zone resource management is still not approved.

In June 2000, the Environmental Framework Law was promulgated. This Law enabled the Ministry of Environment to eventually establish the Higher Council for the Environment that aims to co-ordinate among national authorities as well as to involve civil society representatives.

Recently, and in the context of the CAMP Project, a National Law on Integrated Coastal Area Management was prepared. The proposed new law calls for the sustainable conservation of coastal resources, sets a co-ordination mechanism for managing Lebanese coastal areas, proposes measures to conserve resources, and imposes fines and taxes on violations and pollution.

In order to fulfil its international agreements, Lebanon has signed and ratified a number of international conventions and agreements. Among these, one can refer to the Barcelona Conventions and its related Protocols, the Biodiversity Convention, the Convention calling for combating desertification, the Basel Convention, the Paris Convention concerning the Protection of the World Cultural and Natural Heritage, the Marpol Convention as well as the Ramsar Convention.

Overlapping duties is obviously noticed among concerned institutions, particularly when the need arises to identify the entity accountable for some resource abuse or degradation, such as water pollution, or when to assign responsibilities for the management of specific issues such as solid waste, waste water, reforestation and hunting. Lately, higher committees were formed to overcome overlapping and increase co-ordination, as is the case of the Higher Council for Sand and Stone Quarries. However, the efficiency of such councils is debatable due to incessant political interference.

The following cross-table provides a brief scheme about the institutional overlapping affecting coastal area management.

**Table 1: Scheme of the institutional overlapping**

| | MoE | MoPT | MoA | MoC | MoEW | MoT | MoSA | MoPH | CDR | DGUP | CLA |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Environment** | X | X | X | | X | | | X | X | | X |
| **Agriculture** | | | X | | X | | | X | | | X |
| **Fishing** | | X | X | | | | | | | | X |
| **Urban management** | X | | | | | | | | X | X | X |
| **Water management** | X | X | | | X | | | X | X | | X |
| **Cultural heritage** | X | | | X | | | | | X | X | X |
| **Sustainable Tourism** | X | X | X | X | | X | | | X | | X |
| **Information dissemination and participatory involvement** | X | | | | | | X | | | | X |

*MoE: Ministry of Environment; CDR: Council for Development and Reconstruction; MoPT: Ministry if Public Transport; MoA: Ministry of Agriculture; CLA: Coastal Local Authorities; DGUP: Directorate General of Urban Planning; MoC: Ministry of Culture and Higher Education; MoEW: Ministry of Energy and Water; MoT: Ministry of Tourism; MoAF: Ministry of Social Affairs; MoPH: Ministry of Public Health.*

The Council for Development and Reconstruction is presently in charge of planning. However, this task is not undertaken as thoroughly as a dedicated Ministry of Planning could provide for. This has resulted in the absence of a national vision and plan that take into account special features such as coastal areas which are among the main national key comparative assets.

The first municipal elections took place in 1998 after almost three decades of absence of local administration (for the newly liberated municipalities they took place in September 2001). Since their elections, local authorities have focused on rehabilitating basic infrastructure, namely road surfaces and networking. Other major works such as the establishment of waste water treatment plants were left to central authorities. Municipalities constantly complain of shortage in financial resources. Despite the readiness of these councils, their developmental responsibilities are fragmented, while the achievement of these Projects is frequently based on immediate needs rather than long-term planning, resulting into several irreversible situations challenging the conservation of coastal resources of relevance to economic earning.

In general, municipal councils are elected not based on professional expertise but on the political, family and neighbourhood balance they bring to the council. Hence, they usually lack legal, managerial and technical aspects required to envisage and implement a council's mission in the community. When municipal councils are approached for assistance or partnerships, there is a tendency to view outside parties as mainly funding agents with a one-shot event, and not as a long-term relationship that involves input, facilitation of activities, and new initiatives conducted with mobilised community resources.

**Coastal Pollution**

Coastal resources include marine and coastal fauna and flora, marine and coastal landscape, recreational assets, water resources, as well as economic resources. Coastal resources and coastal population are affected by diverse forms of pollution, notably due to:

- water pollution resulting from untreated effluents discharged from municipal sewage networks, industrial plants, harbors and power plants;
- solid waste pollution producing noxious leakage of effluents, harmful odour emanation and gas releases in addition to visual pollution;
- soil pollution caused by poor and unhealthy agricultural practices such as the excessive application of pesticides and fertilisers;
- the noise pollution ensuing planning and implementing coastal highways parallel to seashore lines; and finally
- the visual pollution caused by the disordered construction of tourism complexes and human settlements that lack the least of aesthetic parameters and conceal the sea sight.

Reasons behind these various pollution symptoms witnessed all along the coast are manifold. For example, since the beginning of the nineties, plans were conceived to lessen and accordingly halt some of the pollution sources and risks. Around 20 wastewater treatment plants were Projected to be built all along the coast. Only a few of them are currently under construction.

Similarly, schemes were elaborated to manage solid waste within the context of integrated system that would embrace waste sorting, recycling, composting and land filling. Apart from the Naameh landfill, these are still paper schemes. One key reason for the lack of implementation is financial shortage, an issue which incessantly reschedules Projects execution from one governmental period to another. Presently, and as a first decentralised initiative, the European Commission (EC) is presenting municipalities with the opportunity to manage their own solid waste by applying directly to the EC funds.

Coastal pollution has actually reached an intensity that would easily and rapidly affect the economic sustainability of the coast, a grave concern to reflect on and resolve, particularly in a State that greatly depends on tourism and services to prosper regionally and internationally.

Accountability for coastal pollution does not pursue one sole governmental institution. It is somewhat the responsibility of all stakeholders, including every national and local authority, as well as the private sector and civil society.

**Land-use Planning**

Based on the coastal definition in the REA Report[19], urbanised areas cover almost half of the coastline and include urban fabrics (21%), large industrial and commercial units (10%), seaside tourists' resorts (7.5%) and sea embankment and dump sites (4%)[20]. Beaches and dunes account for 21% (it is 19% in your earlier quote) of the coastline while bare rocky outcrops about 4.7%.

Urban development is encroaching on natural and agricultural areas. This mostly takes place because the vast majority of the Lebanese territory is not covered by urban master plans. Natural and agricultural areas are increasingly turned into human settlements, 4% of these areas having already been lost to settlements over the last two decades. This is the case of the majority of coastal towns and villages which are still lacking land-use master plans.

Indeed, the fraction of the country administrated by enacted master plans does not exceed 11%. This quite limited percentage comprises about 39% of urban areas (mixture of commercial and human settlements) as well as only about 16.5% of areas changed into human settlements. On the other hand, more than 75% of urban development which took place between 1963 and 1998 (mostly throughout the civil war era) was located outside regulated areas, i.e. in non managed zones.

Urban management falls within the jurisdiction of the Directorate General of Urban Planning (DGUP), which is one of the two directorates forming the Ministry of Public Works. The coastal zone is lawfully administered according to two regional master plans, one for the area from Beirut to the South, the second from Beirut to the North. These master plans were established several decades ago, thus not fully serving nowadays the notion of sustainable coastal development. More explicitly, they do not emphasise upon the preservation and conservation of some areas likely to serve cultural heritage sites or sites of landscape values. They rather offer general considerations such as for construction ratios, roads and highways provisions and specifications.

The Regional Environment Assessment report on the coastal zone of Lebanon[21] stated that "*according to existing coastal zoning (Decrees 3362 and 5450), the entire shorefront outside Beirut is designated for 'tourist' use, with small pockets for industrial areas. Not a single section is deprived from building rights. Taking into consideration Decree 4810, which defined rights for conditional use of the maritime public domain by abutting properties, the entire coast could be released for private 'tourist' development*".

[19] The coastal zone is defined as a 16-km wide sea-land corridor along the Lebanese coastline (eight km on either side of the coastline), with some exception: about 15 km off the coast of Tripoli to capture the Nakhl Islands and about 10 km inland north of Tripoli and east of Sour to capture agricultural plains (the Regional Assessment Report on the coastal zone of Lebanon, CDR/ECODIT-IAURIF, 1997).

[20] Lebanon State of the Environment Report, Ministry of Environment.

[21] Regional Environmental Assessment Report of the Coastal Zone of Lebanon, CDR/ ECODIT-IAURIF, September 1997, page 34.

Based on this statement, it becomes of utmost necessity that coastal zoning shall be reconsidered at national, regional and municipal levels. These master plans shall clearly identify the areas respectively dedicated to industrial, commercial, social and protection purposes.

**Water Resources**

Quantitative data about coastal water resources is a problematical issue, available information being rather estimations and very site specific. On the other hand, there are assessments of coastal water quality, if in a fragmented way, with monitoring activities mostly targeting seawater and some well measurements. Results have demonstrated the deterioration in water quality due to severe illegal urban planning all along the coast associated with water access problems including illegal groundwater water tapping leading to saltwater intrusion in coastal aquifers, lack of appropriate and new wastewater network, overuse of agricultural chemical products, ad-hoc use of surface water resources leading sometimes to unfair distribution of water and lack of resources reaching coastal agricultural plains.

Despite the affluence in Lebanon in water resources, diverse sources converse still about the veracity of such an information especially in the absence of water quantity and quality assessment as well as management schemes at national level and furthermore at the coastal area level. Over the last two years, several internationally funded programmes have expressed their interest in studying the water sector at national level including water quality and quantity, water pricing scheme and water management. It is expected that results from these studies should be available in the coming two years.

Precipitation distribution is not uniform, with 80% of rainfall occurring over a 3 month period (December, January, February), and when water is least needed (especially for irrigation). This calls for very efficient water management schemes to contain this water and reduce losses. In addition, the country's geology (karstic formations covering over 75% of the country's surface) and geomorphology (narrow steep valleys) make it very difficult to efficiently store surface water. This places a major challenge to surface water management. In addition, these conditions do not promote ground water recharge.

Water resources management in Lebanon faces difficulties at all levels, including institutional, legal and technical levels. Several duplications and gaps in the responsibilities of the different institutions and stakeholders of the water management sector still exist. Regional water and wastewater establishments are based on jurisdiction boundaries rather than watersheds, which consequently do not facilitate the implementation of integrated water resource management (IWRM) principles.

The legal framework for water resources management needs review, consolidation and updating to allow for a better and more efficient distribution and allocation of water resources, in addition to a clear identification of roles to be carried out by the different stakeholders.

At the technical level, water supply infrastructure is relatively old and inadequately maintained. Water and particularly wastewater treatment plants are insufficient, leading to surface and groundwater pollution. Skilled staff is not readily available.

Incentives as well as awareness towards more efficient use of water resources (domestic, agriculture and industrial) are almost totally missing. For instance, water pricing structures still based on lump sum values that do not reflect the true value of water, favour water losses and abuse.

There is a pressing need to formulate an integrated strategy for water resource management in Lebanon. This strategy shall be complemented by updating the legal water framework and

proposing adequate economic incentives to safeguard the remaining water quality of the coastal area.

**Industrial Sector**

The greater part of the industrial plants was established during the war time, to be precise, when monitoring and control was the least applied. The majority of industrial facilities were established on the coast, with the objective of gaining faster transportation and fewer costs towards their destination markets. Available documentation reports the presence of around 20,000 small to large size industries along the coastal area with many of them having no legal permits or located outside regulated industrial zones (so it is a planning issue as well). Moreover, the scattered distribution of this large number of industries resulted in coastal settlements and lead to the privatisation of public domains and large construction all along the shore.

Industries are believed to be a main cause of pollution for both marine and water sources. Industries were not properly outfitted with required sanitary equipment and techniques in order to prevent water, soil and air pollution. This matter is dramatically contributing to an increase in industrial pollution, consequently causing damages to human health.

The industrial sector falls within the jurisdiction of the Ministry of Industry and Trade. It is in charge of reforming and restructuring the sector. Despite the improvement gradually attained, the key lies in the fact that few classified industrial zones have been established until the present moment. As a result, industries are scattered in areas that should be classified as tourism, human communes or conservation areas.

In terms of industrial pollution, monitoring is part of the Ministry of Environment (MoE) competence. In this respect, MoE enacted a set of ministerial decisions aiming at controlling industrial emissions according to acceptable standards and parameters. Therefore, strong partnership was ensured between the Chambers of Commerce and MoE to guarantee that industrialists understand and abide by the contents of these decisions. In addition, several capacity building initiatives were organised and good housekeeping guides were released.

The proposed national land-use planning process (known as SDATL) currently carried out by the Council for Development and Reconstruction is expected to provide required planning and allocation of new regional industrial zones. This plan, if endorsed, shall significantly alleviate the harmful costs (whether economic, health-related, or environmental) resulting from the existing anarchic spatial distribution of industries.

In addition, enforcing the monitoring on industrial sector, applying the “Polluter Pays Principle” and providing green incentives are precedence to diminish industrial pollution pressure on coastal communities and safeguard the economic comparative advantages of Lebanese industries.

**Agriculture**

Agriculture used to be considered as the second national economic driving activity following tourism and services. Coastal plains were known for their cultivations such as citrus trees (orange and lemon trees), banana plantations, fruits and vegetables. Production used to cover national needs and enabled some exports. During and after the war, this sector has been heavily affected mainly by the conversion of agricultural lands to other purposes, as well as by the lack of governmental support and high immigration.

As a consequence to the fragile weak governmental attitude towards protecting the agricultural sector in coastal areas in terms of lands, products and economic outputs, farmers are nowadays

more and more turning their fertile lands into fast return-on-investment Projects, mainly in the tourism sector. In addition, traditional agricultural cultures are replaced by fast money-making agriculture, these changes being not necessarily based upon consolidated national and regional market studies as well as taking into account the comparative advantages at both national and regional levels. That is precisely the situation of citrus trees that are gradually disappearing all along the southern coast, leading the place to intensive banana cultivation inside greenhouses.

Additional stress on coastal agricultural plains and lands is reflected by the permanent urbanization and industrialisation real-estate pressure on agricultural and natural lands.

Lebanese agriculture is also confronted to a number of constraints. The most critical ones are due to:

a) the excessive competitiveness of foreign agricultural goods on local markets;

b) the non conformity of Lebanese agricultural products with respect to the environmental standards of European markets (except for some Arab countries standards); and

c) the weak technical skills of farmers towards increasing agricultural efficiency and competitiveness.

More importantly is the unremitting and inexplicable absence of a countrywide agricultural plan, in spite of the significant necessity for such a plan and the ceaseless wishes formulated by political and community stakeholders to accomplish it.

The Ministry of Agriculture is the governmental body in charged of running the agricultural sector, including among other duties, setting a national agricultural plan, monitoring and controlling the use of pesticides and fertilisers, and building the capacities of farmers.

Some governmental economic incentives such as EXPORT+ were devised to support farmers in upholding their agricultural businesses. The Investment and Development Authority of Lebanon (IDAL) is in charge of disseminating the programme. Nevertheless, the dissemination of this programme seems to be still very restricted, possibly due to the lack of farmers' acquaintance and familiarity about its terms and contents.

Agriculture is undoubtedly one of the core comparative advantages at nation-wide level. Its safeguard will lead to a better affluence of the coastal area in specific and the nation at large: this measure will open the floor towards creating job opportunities, alleviating rural exodus and immigration, confirming the coastal diversified identity, and finally expanding additional tourism-related products.

**Fishery Sector**

Lebanon has 4,000 fishermen, based in the ports of Tripoli, Byblos, Jounieh, Beirut, Saida, Sarafand, Tyre and few fishermen in Naqoura[22]. Boats, generally having a length between 8 to 10 meters, are fairly equipped and exploit the potentials offered by the current fishing zones.

Lebanon produces 4,500 tons of fish each year . This is far below the level of national consumption needs. Therefore, Lebanon imports more than 10,000 tons of fish (1996), essentially from the Gulf countries, Morocco, and Turkey (fish is also imported, in smaller quantities, from Egypt and Senegal[23]). Fish is lower in quality and two to four times less expensive than local catch.

[22] Fishing as a job or hobby, Trans. Ministry of Agriculture, 1994.

[23] Regional Socio- economic Development Programme for South Lebanon, UNDP, 1999.

On average the income per fisherman is US$100 per month, which is not enough to improve their lifestyles nor their fishing equipment.

The most polluting industries that probably affect the fish communities are those which are considered as high-risk facilities for health or environment, such as tanning and dressing of leather, manufacture of paper and paper board, fertilisers compounds and cement lime.

The fishery sector is mandated by the Ministry of Agriculture that controls the overall management for protecting the fishery resources, regulating the fishing activity, enforcing laws related to the use and application of fishing techniques, and finally, providing permitting licenses enabling the constitution of fishermen syndicates.

The legal system running the fishing sector is reasonably comprehensive as regards to defining categories of fishing equipment to be utilised as well as varieties and quantities of fish to be caught. In addition, the promulgated laws and decrees categorise marine species banned for fishing based on the conventions and agreements ratified internationally by the Lebanese government. Enforcement on the ground is undertaken by Coast Guards who fall under the jurisdiction of the Ministry of Public Transport.

Despite the clearness of the legal framework, practices on the ground have been far from being respected during the last decades. Fishermen used to expansively catch fish using illegal equipment, dynamites and toxic supplies, and netting species such as turtles, monk seals, and other migratory fish although their catch was not always intended for consumption. Over the last years, these practices have been significantly reduced. However, fishermen still lack awareness about some matters especially those related to conserving fish communities and impact of marine resource over-exploitation.

Fishing is an additional coastal industry that needs support, protection and capacity building. If not well assisted, Lebanon might witness fewer new generations of fishermen, and consequently the fishery sector would most likely become part of the social heritage.

**Biodiversity**

Biodiversity management is most likely the encouraging and positive ecological facet nation-wide. It is also an added area of concern since conservation and administration intersect among several ministries.

Lebanon is believed to host a large variety of fauna and flora species that are endemic, threatened or of global importance. Hundreds of Mediterranean species of phytoplankton, algae, lichens, mushrooms, phanerogames, zooplankton and benthos, 357 fish species are identified, as well as 21 species of cephalopods, 4 species of turtles and 6 marine mammals. The country is also a route for migrating birds which quantification and monitoring are currently subject to many Projects and studies.

Biodiversity (species and their ecosystems) is mostly threatened by unregulated and excessive human activities. For example, several coastal woodlands species have been reduced dramatically mainly due to overgrazing for charcoal production and to urbanization: natural woodland vegetation remains therefore in very few coastal areas, including slopes close to the Kalb, Damour and Awali Rivers.

Other human threats include coastal physical modifications due to marinas and large tourism complexes, untreated waste water discharges, agricultural effluents, and other pressures that result from implementing Projects not preceded by environmental impact assessment studies.

Only one natural threat is identified in the marine environment, an invasive species, the brown alga, *Stypopodium zonale,* which could constitute a real threat to marine biodiversity.

Twelve coastal sensitive sites have been identified as priority conservation areas due to their ecological richness or distinctiveness and landscape value. Urgent measures should be concluded and carried out to preserve areas such as Akkar beach and dunes, Akkar agricultural plain, Ras El-Cheqaa, Amsheet-Jbeil coastal area, Nahr Ibrahim Valley, Nahr El-Kalb valley and river mouth, Damour agricultural plain, Rmeileh beach, Tyre beach, Iskandarouna, and Naqoura.

Since the early nineties, initiatives have been multiplied to preserve biodiversity resources at the national level. In this respect, non-governmental organisations have been more active than government in identifying and calling for the preservation of sites endowed with biodiversity resources. Accordingly, an increasing number of sites have been legally declared as protected areas. Partnerships between NGOs and MoE have been experienced in managing three protected areas in the framework of a Project funded by the Global Environment Facility (GEF). Following its success, this collaboration was further extended to another Project funded by the French GEF, and which entails the management of two coastal sites. Other sites, most of them being declared as protected areas by-law, are currently subject to internationally financed initiatives.

Among these spots, only two coastal sites have been part of international funding aiming at biodiversity conservation: the Palm Islands Reserve and Tyre Beach Reserve. This issue reflects to which degree coastal resources endure intensive exploitation and degradation.

Both Ministries of the Environment and Agriculture are doubtless more concerned than other public entities, since their constitutional bylaws give straight provisions calling for biodiversity conservation. As a matter of fact confusion might take place as to which Ministry a complaint should be reported regarding a violation or vandalism carried out on a site of biodiversity significance. Both ministries are entitled to identify areas for protection. The difference between the two national entities remains in the fact that the Ministry of Environment provides room for community involvement in managing protected areas by giving local non-governmental organisations the right to administer these sites in collaboration with and supervision of the Ministry of Environment and the funding agencies.

The Ministry of Interior and Municipal Affairs is equally concerned at both facets: it is the Ministry in charge of enforcing laws and of managing and encouraging municipalities to adopt means for local resources conservation.

**Cultural Heritage**

Lebanon is a country rich in cultural resources. Its urban history dates back to the 3rd millennium BC and is marked by continuous occupation of the coastal centres since antiquity. The cultural heritage of the coastal area of Lebanon consists mainly of large urban centres with a long settlement history. These centres are either still inhabited, such as the cities of Beirut, Sidon and Tyre, or are stand alone mounds characterised by their outstanding topographical nature such as the ancient tells of Sarafand, Jiyeh, Tell al-Burak, and Tell al-Maashuq. Apart from these large-scale features, smaller no less important cultural resources such as olive oil production complexes of the Late Roman period, ancient necropolis, old harbors, traditional town and village cores, vernacular architecture, cultural landscapes, natural and historic landmarks, as well as historic battlefields, characterise the coastal historic environment in that area.

Because of its small territorial area and its high population density, the coastal fertile strip of land and the rest of the country are heavily settled and constantly under pressure for new development. Pressure often comes into conflict with and jeopardises the preservation of the rich cultural resources which abound throughout the landscape.

Another major section of the coastal cultural heritage includes traditional customs and beliefs as well as crafts, folklore and oral history. Major issues facing proper cultural resource management are considered critical issues common throughout the Lebanese coastal area.

The current conditions governing the management of the cultural resources of Lebanon have been widely disfavoured by the war years as well as by a backlog in research, conservation and management for decades. This has been accentuated by the lack of a vision and strategy for managing the cultural resources as well as a serious drop in maintenance and preservation Projects.

The protection and management of the cultural resources of Lebanon is the responsibility of the Directorate General of Antiquities, originally under the Ministry of Tourism but currently under the Ministry of Culture. The administrative structure of the Directorate has not significantly changed since the 1970s. It is currently very difficult for this institution to carry out its mandate and cope with the growing demands of cultural resource management without a significant change and increase in its technical staff. Although administrative change is a slow procedure within the Lebanese administration, plans are currently prepared for improving the structure of the Directorate and empowering skill strengthening of its staff through fresh certified recruits.

Meanwhile, the other impediment to proper cultural resource management is the current law of antiquities which dates back to 1933 and is a hybrid of the old French antiquities' law. This law, needless to say, is outdated and many regulatory instruments that are now necessary for protection, conservation and management of heritage were at that time not provided. An attempt has been made lately by the Ministry of Culture to draft a new antiquities' legislation, but the process has so far been slow, not to mention the fact that the legislation has not yet been assessed and verified by the wider expert community.

Today, a few Projects are being commissioned by the Directorate of Antiquities as a response to urgent intervention needs and priorities. In addition to these, there has been an active development of foreign aid and grant Projects to safeguard the heritage of the country and develop its management and use for the benefit of society.

Such Projects are mainly funded by the World Bank, UNESCO and the European Commission. Although limited in scope, their impacts on the development of a management approach and short term vision at the Directorate of Antiquities are quite significant whereby responses to critical issues in management are now based on previous experience as opposed to arbitrary subjectivity. It is hoped therefore that the implementation of such Projects will help build an infrastructure for sustaining heritage management in Lebanon.

The key issue that remains to be addressed is the empowerment of the institution responsible for caring for heritage locally through a national government strategy that recognises the central role heritage has to play in determining and enriching the identity of the people and aiding its development in an increasingly normative global world.

**Tourism and Sustainable Development**

In general, tourism concentrates for the most part in Beirut and its surroundings in the form of summer resorts, despite the status of water estimated to be highly polluted. In addition, privatisation of beaches and devastation of coastal areas by huge tourist complexes as well as

industrial plants are not helping in designing sustainable tourism development plans for the coast. Public and private coastal domains are highly coveted due to the economic importance of tourism and the resulting revenues. Marinas, large sea resorts complexes, and many other forms of mass tourism destinations are increasingly encroaching the maritime domain, making ever harder for the Lebanese citizen to enjoy freely and without expenses beaches that are public properties by law.

Conventional tourism is largely expanded, and more notably when the area of concern is the coastal area. Alternative forms of tourism on the coast are still quite limited. Besides visits to the coastal reserves of Palm Islands (Tripoli) and Sour Beach, beaches managed by private firms witness large numbers of sunbathers**.** This increase in demand is reflected by the high and growing figure of local visitors to private beaches such as the rocky beach located to the south of Batroun and the sandy beaches of Jbeil (Byblos), Jiyeh, Rmayleh and Sour (Tyre). On the other hand, cultural and historical resorts are mostly visited by foreign tourists rather than by locals.

Tourism reflects the fact that most of the Lebanese territory is not subject to land-use regulations. In addition, it is extremely affected by the alarming visual pollution, the shrinkage in green spaces, as well as the limited monitoring procedures applied to touristic establishments. Finally, the conviction of the government policy to promote and invest in conventional tourism contradicts the current international tourism trends, and consequently, this would limit taking advantage of the comparative advantages specific to each Lebanese region, including the coastal area.

Conventional tourism is subject to regulations set by the Ministry of Tourism. This entails among other duties the provision of permits for setting tourism resorts, as well as monitoring and controlling tourism activities, including restaurants and hotels. Conversely, alternative tourism lacks any regulatory or institutional setting.

For lengthy decades, the government has been lacking a national strategy for tourism development. In 1996, the World Tourism Organization (WTO) was commissioned by the Lebanese government to carry out a national plan for tourism development and reconstruction. The plan focused a great deal on describing the institutional, regulatory and historical background of the Lebanese tourism industry, illustrating the strengths and weaknesses of tourism human resources and various services provided, in addition to detailing present and potential clients in the national and regional tourism schemes context. The report portrayed the state of archaeological and historical sites. It concluded with providing scenarios for the development of the tourism industry in Lebanon. However, this plan did not provide room for promoting alternative tourism that is based upon nature.

Currently, a study is being carried out on ecotourism potential in Lebanon. The study is commissioned by the Ministry of Tourism and funded by the Japanese International Co-operation. The outputs of this study will be available by mid 2004. Ecotourism is a key potential alternative to mass tourism in coastal zones, especially in the less urbanised South of the country.

Internationally funded programmes and Projects increasingly comprise sustainable tourism components, aiming at upgrading the livelihood of local communities in Lebanon. Capacity building initiatives are multiplied targeting local communities and sustainable tourism. Nevertheless, these efforts remain curtailed unless government awards regulatory, fiscal and financially viable incentives aspiring at harmonising these actions.

**Participatory Involvement and Information Dissemination**

*The role of non-governmental organisations*

During the war, hundreds of social Non-Governmental Organisations (NGOs) played the role of the government in providing populations with some basic needs such as medicines, food, etc. After the war era, NGOs and Community Based Organisations (CBOs) continued their role in remote rural areas, and in addition they gradually contributed towards increasing awareness of local communities on issues related to health, social equity, and poverty eradication and recently on environment.

Environmental NGOs became legally recognised through procedures carried out via the Ministries of Interior and Environment. Nowadays, hundreds of these community groups are disseminated all over the Lebanese territory. Activities implemented by the majority of these NGOs and CBOs concentrate on raising awareness (workshops, conferences, awareness campaigns) primarily associated to biodiversity conservation, waste management, ecotourism and pollution. Implementable initiatives focus mostly on reforestation as well as waste sorting and recycling. Due to the limited financial resources as well as the problematical socio-economic conditions, these initiatives have been irregularly distributed all over the country. They are even fewer along coastal municipalities.

It is to note that social NGOs have recently contributed to developmental Projects that entail implementation of infrastructure (wastewater treatment plant, composting plant, agricultural roads, etc.), capacity building and awareness programme of sustainable development scope.

Indeed, and since 1997, community development Projects have been implemented in well identified deprived rural areas, NGOs working in social fields participating at the sub-Project level. Projects funded by the United States Agency for Development (USAID) clearly exemplify the patterns and contents of such initiatives. Organised into clusters grouping a number of villages, these Projects have been designed to upgrade basic infrastructure. Local co-ordination has been ensured through establishing local committees encompassing representatives of the local authorities and local stakeholders in addition to the NGO in charge of implementing the sub-Projects works.

Surprisingly, the coastal area has been least targeted by these Projects. The experience of the CAMP Project was among the few initiatives reported in that regard.

*Local communities and participation*

Coastal local communities are often aware of observable coastal environmental issues such as, the deteriorating condition of beaches, the haphazard construction on the coast; the absent or inefficient water wastewater management infrastructure, and, the decrease in agricultural lands. However, actions tend to be limited if they do not address economic issues. Even when community members are provided with skills and tools to better plan and carry out activities, this lack of excitement to act may stem from an assumption that nothing will change anyway, or that any initiative requires a lot of money, or that there is no sense of urgency.

On the other hand, some communities think beyond immediate gain to more long-term solutions that address environmental concerns. They often crave skill building and just request modest assistance to move forward because they themselves are eager to do something positive in their community.

In terms of community participation, there is an increasing trend to activate the role of women and youth in community development. However, this often depends on communities' civil society. For instance, where a large and active number of NGOs exist, more women and youth

appear in other developmental initiatives. Where experience in civil society is low and municipalities are new, there tends to be lower engagement from all members of the community. Targeting different issues with different age groups can be sometimes beneficial. For instance, young people are much more interested in the state of the beach and their ability to swim and spend time there, whereas mothers are more concerned about the quality of drinking water and waste management, and the unemployed about their source of livelihood such as fishing potentials and agricultural productivity.

*Municipalities and local development*

At a national level, there is growing momentum to recognise the important role municipal councils play in their community's development, even though sometimes, the financial viability of the councils are at stake and left to the whims of the central government's budgetary measures. Although there is a greater incentive to create processes that enhance community participation, however, such decentralised and participatory mechanisms are still new to most communities and will require a lot of time to be fully integrated into people's attitudes and views on their roles and that of their elected councils.

Positive developments with municipal councils depend very much on their level of co-operation, willingness to delegate and empower other members of the community, and basic knowledge about the community and about management issues. In addition, relationships between members affect positively or negatively what the council can do as a group.

High-level support of coastal environmental policies and activities in a region often help municipalities to pursue Projects or at least withstand pressure from purely commercial initiatives. Being a part of a municipality union provides much-needed development resources to complement limited municipal resources such as joint workshops, municipality twinning activities (both local and national) as well as funding opportunities for community development.

*Access to information*

Information access is another bewildering issue. Despite the implementation of indefinite quantities of developmental studies and surveys since the end of the civil war, retrieving a large part of these reports reveal to be a challenging task. Data are either considered as confidential information to a specific administration or misplaced following ministerial changes. At a different level, many reports were written based on assumptions and Projected scenarios rather than based on real facts and figures. Accessing information related to environment and development is not publicly institutionalised yet. Even more, most of the data existing for particular localities is not channelled to national and local authorities as an attempt to enable better planning and implementation based on available resources. This matter limits above all the opportunity of setting up informed and updated municipal administrations, as well as local communities knowledgeable and aware of the national strengths, potentials and constraints.

## ICAM Strategic Objectives

Based on the identification of key issues at stake throughout the previous diagnosis of the coastal area, the national ICAM strategy aims at proposing:

- Strategic objectives to address these issues; and
- Activities to solve these issues and achieve wished-for strategic objectives.

**Issues at Stake**

Based on the preceding overview which described the coastal features, resources and activities in Lebanon as well as the coastal area administrative and institutional structures, it seems clear that coastal areas face a series of issues which impinge on its rational and sustainable management. Strengths and opportunities to improve the situation shall be seized whenever and wherever met.

The foremost issues at stake could be summarised as follows**:**

- The weak legal enforcement, despite the current efforts to promulgate laws that call for sustainable development;
- The overlapping in duties among administrative institutions; nevertheless, it is to note that attempts to increase collaboration are increasingly made through establishment of national councils;
- The political interference in benefit of implementing private investments that are not always in favour of sustainable coastal development; however, developing alternative community-orientated investments is gradually more considered.
- The lack of national planning processes administered according to the specificities of Lebanese regions, such as the coastal area; the currently national land-use programme (SDATL) may considerably contribute to modify the situation;
- The fresh familiarity and know-how of local authorities in municipal administration; although, a willingness to take their future in their hands and develop their management skills is to be noticed;
- The shortage of financial resources at both national and local levels; however, the availability of international investments that should be allocated according to prioritised needs;
- The overexploitation and depletion of coastal natural, cultural and economic resources; the growing awareness towards the importance of preserving these resources will greatly assist in overcoming this threat;
- The difficult socio-economic situation of the coastal communities leading to rural exodus, immigration, selling lands into short-term profitable investments;
- The lack of awareness at all levels; however, the multi-level programmes designed to increase awareness are slowly but surely changing the situation;
- The weak information dissemination scheme.

**Strategic Objectives and Proposals for Actions**

An ICAM strategy as a decision-making framework focuses on a specific territory (the coast, and in some instances entire water catchment areas beyond the coast); this strategy shall be imbedded in a wider National development strategy covering the whole of Lebanon. The ICAM strategy is explicit on how it fits within that National development strategy and what added-value it brings to it. For example, it provides a clear vision on coastal specific issues and proposes tailor-made objectives and actions for that territory that do not contradict national development priorities. Moreover, it is to serve the three mainstays of sustainable development: economy, environment and culture in its wider sense.

Strategic objectives are of two types: sector based (urban planning, water, agriculture, fisheries, tourism) and trans-sectoral (socio-economy, institutions and legislation, participation and information). Both are needed at the level of a national ICAM strategy, the former to ensure

comprehensiveness and adequacy within sectoral programming and implementation, the latter to support and organise coherence and synergies between sectoral decisions. Here, it is to mention that regulatory and legislative strategic objectives were not elaborated on purpose in a separate section, but they were integrated within the sectoral based strategic objectives.

Strategic ICAM objectives for Lebanon call for:

- Adopting a national sustainable development plan that takes into account decision-making process, economy, environment and populations;
- Mainstreaming decision-making processes between national and local governments to improve coastal management;
- Recommending and campaigning for the use of green economic incentives, intending at switching small and medium industrial, touristic and commercial enterprises (SMEs) into environmentally friendly enterprises;
- Providing means for employment creation aiming at halting land-use alteration practices and rural exodus and immigration;
- Ensuring the protection of natural and cultural heritage;
- Enforcing information dissemination and access among public authorities on issues related to sustainable development;
- Upgrading management capabilities of national and local authorities to meet ICAM requirements;
- Ensuring enforcement of available and adequate procedures in order to control coastal resources over-exploitation;
- Developing awareness building and participation for government, municipalities and citizens on the national issue of ICAM as a way towards sustainable development.

It is to note that designated responsibilities for every central and local authority was purposely not cited within this section, as it is believed that responsibility and accountability shall be shared by all with a stake in coastal management to ensure a long-term coastal management. Nevertheless, the last section of the strategy highlights the main roles that each concerned governmental entity could play in that regard.

In order for many of the coastal relevant solutions proposed to be enacted, some facilitating institutional and legal conditions should be met at national level that are beyond the scope of coastal issues *stricto sensu*. However, being informed of the specific requirements for coastal area management and development, set conditions at national level should provide for specific mechanisms and regulations to facilitate activities and initiatives in coastal areas.

The section below presents first sectoral and then intersectoral strategic objectives. Strategic objective are gathered according to a priority time scale: short term (within five years), medium term (five to seven years) and long term perspective (more then seven years).

Sectoral strategy encompasses environment, fisheries, planning, cultural heritage, etc; intersectoral strategy gathers socio-economy and information / participation.

Inter-sectoral issues and related strategic objectives and proposed actions are finally highlighted. Such issues may depend on new institutional arrangements to be organised between relevant ministries.

## Sectoral Strategies

### Environment

The preservation of the environment should be undertaken through enforcement of existing laws, increasing decision-makers and citizens awareness, dissemination of information, provision of technical assistance, monitoring and evaluation activities. Proposed strategic options and associated activities include:

*Strategic choice: To halt degradation of coastal marine and terrestrial resources.*

*Proposed activities:*

- To carry out an assessment of the current situation of coastal marine and terrestrial biotopes, based on field surveys and studies;
- To design and carry out a five-year monitoring programme to evaluate the impact of diverse forms of pollution on coastal marine and terrestrial resources; the programme should include field surveys and studies in addition to building national capacities;
- To preserve the little of what remains of the Lebanese coast by classifying them as viable natural reserves, including sandy beaches, promontories, and agricultural plains;
- To put into place financial programme designed specifically to assist in sustainably managing natural reserves.

*Strategic choice: To carry out required infrastructure works aiming at preventing progress of coastal pollution.*

*Proposed activities:*

- To lobby for the implementation of the governmental programme leading to rehabilitating existing wastewater networks and treatment plants, and establishing new ones;
- To enforce monitoring and regulatory process that imposes the rehabilitation of existing cesspools and septic tanks and their upgrading into well designed operational septic tank;
- To design and implement integrated solid waste management programmes to be applied at municipal level. These programmes shall include establishment of solid waste treatment plants, awareness and capacity building initiatives;
- To change currently designs set for highway plans to avoid them crossing areas considered as potential nature reserves;
- To obligate industries to be outfitted with required devices aiming at reducing noxious emissions and effluents.

*Strategic choice: To put into effect and supplement the environmental regulatory framework with additional legal tools to encompass diverse facets of environmental conservation in general, including the conservation of the coastal area.*

*Proposed activities:*

- To propose specific decrees targeting topics such as Environmental Impact Assessment, marine protection, Environmental Fund, based on the provisions of the Environmental Framework Law. These decrees shall be submitted to the Council of Ministers; What about Strategic environmental assessment of plans and programmes, this is definitively an institutional issue at policy level;

- To submit the decree leading to identifying members and activating the role of the Higher Council for the Environment, to the Council of Ministers;
- To submit the National ICAM Law to the Council of Ministers at the earliest ministerial session;
- To lobby towards the government to ratify and enforce the obligations set by the Barcelona Convention and its related Protocols; this shall be made possible through integrating Barcelona Convention principles within national laws;
- To enforce the existing legal texts leading to halt over-exploitation of water resources (especially groundwater), coastal sand extraction, over-use of pesticides and illegal fishing practices;
- To compel the preparation of Environmental Management Plans on any industrial Project including manufacturing or transformation industry, water or wastewater treatment plants. This should made a pre-requisite prior to providing license to operate;
- To establish integrated river basin management plans for all Lebanese rivers.

*Strategic choice: To increase co-operation mechanisms involving central-central, central-local and local-local levels aiming at protecting the coastal environment.*

*Proposed activities:*

- To encourage co-ordinated actions approach to effectively address the issue of the degradation of the Lebanese coast whereby all coastal cities need to take co-ordinated actions in view of disseminating information, involving and mobilising the population to lobby against illegal urbanization processes.

*Strategic choice: To introduce and assist coastal local authorities in applying ICAM concept in the context of coastal resources protection.*

*Proposed activities:*

- To organise training programmes and roundtable sessions aiming at introducing ICAM concept and tools, upgrading local authorities capabilities in administrative, legal and technical issues to meet the requirements of ICAM implementation;
- To provide local authorities with decentralised power to enable them resolving the issue of the illegal settlements located within their own municipal boundaries.

*Strategic choice: To increase public awareness on coastal zone protection and on the impact of coastal resources degradation on health and economy.*

*Proposed activities:*

- To undertake awareness campaigns to reduce illegal actions taken against coastal ecosystem (e.g., preserving nesting areas, prohibiting sand dredging, regulating fishing activities, etc.);
- To undertake awareness campaigns to encourage people considering coastal resources as valuable resources in view of reducing their over-exploitation and thereby promoting their wise use.

*Policy implementation at short term (within 5 years):*

- To propose and adopt specific decrees based on the provisions of Environmental Framework Law *(legal action);*
- To activate the Higher Council for the Environment *(regulatory action);*
- To adopt the National ICAM Law *(legal action);*

- To make the EIA preparation a mandatory step for any marina, land reclamation or development Project on the seashore *(legal action);*
- To support local authorities decisions in resolving the issue of the illegal settlements along the shore *(regulatory action);*
- To accelerate the implementation of the already designed wastewater networks and treatment plants *(action at both regulatory and financial levels);*
- To assess the current situation of coastal marine and terrestrial biotopes based on field surveys and studies *(technical action);*
- To undertake awareness campaigns to valorise coastal resources and reduce illegal actions taken against coastal ecosystem *(action at both awareness and regulatory levels);*
- To enforce the preparation of Environmental Management Plans for any industrial Project including manufacturing or transformation industry, water or wastewater treatment plants *(regulatory action);*
- To establish integrated river basin management plans for all Lebanese rivers *(regulatory action).*

*Policy implementation at medium term (in 5 to 7 years time):*

- To ratify and put into force the provisions of the Barcelona Convention and its related Protocols *(legal action);*
- To encourage co-operative initiatives at various governmental levels to effectively address the issue of the Lebanese coast degradation *(action at both regulatory and financial levels);*
- To upgrade local authorities capabilities in administrative, legal and technical issues to meet the requirements of ICAM implementation *(training action);*
- To preserve the little of what remains of the Lebanese coast by classifying them as viable natural reserves, including sandy beaches, promontories, and agricultural plains *(regulatory action);*
- To fully stop over-exploitation of water resources (especially groundwater), coastal sand extraction, over-use of pesticides and illegal fishing practices *(regulatory action);*
- To compel the elaboration and implementation of Environmental Management Plans *(regulatory action).*

*Policy implementation at long term (in 10 years time):*

- To obligate the entirety of the industrial sector to be outfitted with required devices aiming at reducing noxious emissions and effluents, in compliance with national and international standards. This shall embrace any economic entity reported to be operational all along the coast including tourism complexes and resorts, industrial units, power plants, and harbors *(action at both regulatory and financial levels).*

**Land-use Planning**

The strategy calls for the preservation of the entire Lebanese coastline. It should enable considering other alternatives to the proliferation of conventional harbour and industrial zones, maritime boulevards and tourism complexes. The proposed strategic choices and activities allow development scenarios, better balanced and more sustainable.

*Strategic option: To ensure balance between national socio-economic development, and the protection of natural, cultural and landscape heritage by preparing and adopting adequate national land-use plans.*

*Proposed activities:*

- To adopt the national land-use planning (SDATL) currently under preparation by the Council for Development and Reconstruction;
- To preserve and consolidate large-scale agricultural lands, such as those around Akkar, Sour, Sarafand, and Damour by establishing necessary legal texts controlling construction activities and infrastructure implementation), as well as providing incentives to farmers and owners to ensure protection; this is not clearly an action;
- To review and redesign master plans intended for central urban zones in coastal zones in order to reduce their densification (Saida, Sour, Ghazieh);
- To submit to the Council of Ministers an integrated transportation policy that takes into consideration the requirements of sustainable development;
- To structure the road network to allow a separation between local and transitory traffic.

*Strategic option: To emphasise on the preservation of viably economic spaces and opt for implementing economic choices that go along with sustainable development principles.*

*Proposed activities:*

- To call for appropriate master plans and to propose necessary legal texts to reduce consumption of agricultural and natural spaces and to advocate for the densification of peripheral urban zones and the reduction of land transformation (such as in Barja, Chhim and Nabatyeh);
- To promulgate decrees to protect river basins that shall serve as natural corridors linking the coast to the inland. In additions, these rivers should be subject to a national programme for integrated river basin management;
- To combat conversion of the coast against massive artificial areas and illegal encroachment of the public maritime domain through applying necessary legal provisions;
- To encourage viable and ecological alternatives instead of the tourism trends currently installed.

*Policy implementation at short term (within 5 years):*

- To adopt the national land-use plan (SDATL) *(policy action);*
- To modernise urban management and regulatory tools *(regulatory action);*
- To integrate sustainable environment and development principles within urban master plans *(regulatory action);*
- To introduce mechanisms of participation and dialogue between central and local authorities together with local communities *(awareness action).*

*Policy implementation at short term (in 5 to 7 years time):*

- To decentralise and empower local authorities *(regulatory action);*
- To enable local communities and authorities directly handling local environmental and socio-economic problems *(regulatory action);*
- To undertake coastal rehabilitation (combating beach erosion, destruction of illegal constructions, etc.) *(action at financial and regulatory levels);*
- To finalise and adopt regional and local urban master plans *(regulatory level).*

*Policy implementation at short term (in 10 years time):*

- To acquire the totality of the natural sites of the Lebanese coast *(action at financial and policy levels);*
- To get back the totality of the encroached public domain (*action at regulatory and financial levels);*
- To review coastal master plans *(regulatory action).*

**Integrated Water Resource Management**

This section addresses three recommended levels of application. If implemented, these recommendations will set-up the necessary framework for sustainable water resources management, since the legal, institutional, and human aspects (capacity building and awareness) of water management will be strengthened.

*Strategic choice: To develop water policies and laws, as well as to define rules for intervening institutions at the national level.*

*Proposed activities:*

- To draft the "Water Code", which clearly defines the responsibilities of the different institutions / agencies having a role in water management, eliminates gaps and duplications in existing legislation, and promotes principles of integrated water resource management (IWRM);
- To prepare accompanying necessary application decrees to ensure enforcement of existing and proposed legal framework (Environment framework law, proposed national ICAM law);
- To put into place mechanisms to finance water management activities, in particular with the introduction of the water pricing policy reform, and eventually through privatisation of water services;
- To improve capacities of national authorities including staff of the Ministry of Water and Energy, water authorities and local municipalities, through organising capacity building initiatives, in order to strengthen the human resources in different issues related to water management.

*Strategic choice: To apply integrated water management regulations to water bodies, including the entire river basins, formulated at the sub-regional and institutional level.*

*Proposed activities:*

- To prepare regional master plans at the river basin levels or catchment zones clearly identifying water supply options, water needs, sources of pollution, future requirements, and assessing options to meet these requirements, not only through water supply management, but also working on the demand side management;
- To create participatory mechanisms to assist in the implementation of the regional IWRM master plans;
- To identify specific measures to mitigate salt water intrusion in coastal aquifers.

*Strategic choice: To ensure that needs of the communities, municipalities and other interested groups are expressed and resolved at local level.*

*Proposed activities:*

- To establish basin committees or councils to co-ordinate the actions of existing multiple overlapping national organisations and administrative jurisdictions.;

- To organise a set of awareness programmes targeting local communities to increase awareness on importance of water conservation and protection;
- To emphasise on the role of local communities in water resources management, so that these become committed and encouraged to actively participate in the promotion of sustainable water management.

*Policy implementation at short term (within 5 years):*

- To establish basin committees or councils to co-ordinate the actions of existing multiple overlapping national organisations and administrative jurisdictions (river basin specific, regulatory action);
- To improve capacities of water authorities staff to strengthen the human resources in different issues related to water management (river basin specific, training action);
- To identify specific measures to mitigate salt water intrusion in coastal aquifers; for instance, a mechanism to stop illegal pumping should be put in place (coastal specific, regulatory action);
- To raise awareness of local communities on importance of water conservation and protection (awareness / participation action);
- To emphasise on the role of local communities in water resources management, so that these become committed and encouraged to actively participate in the promotion of sustainable water management (awareness / participation action).

*Policy implementation at short term (in 5 to 7 years time):*

- To draft a "Water Code", clearly defining the responsibilities of the different institutions / agencies having a role in water management, eliminating gaps and duplications in existing legislation, and promoting principles of IWRM (legal action);
- To create participatory mechanisms to assist in the implementation of the regional master plans (policy and regulatory action).

*Policy implementation at short term (in 10 years time):*

- To propose mechanisms aiming to finance water management activities, in particular with the introduction of the water pricing policy reform, and eventually through privatisation of water services, should be put in place (action at financial and policy levels);
- To prepare regional master plans at the river basin levels or catchment zones (to be identified and decided upon), that clearly identify water supply options, water needs, sources of pollution, future requirements, and assess options to meet these requirements, not only through water supply management, but also working on the demand side management, and with concrete actions to protect water quality. Transboundary issues should be considered, especially given the karstic nature of the Lebanese major aquifers. The best option should consider environmental, social and economic conditions, in line with the principles of sustainable development and strategic environmental assessment (regulatory action).

**Agriculture**

The preservation and the improvement of the agricultural sector may be undertaken mainly through providing technical assistance, enforcing laws as well as an appropriate dissemination of information. Proposed strategic options include:

*Strategic option: To enforce regulatory and institutional procedures aiming at upgrading the quality of coastal agricultural products in order to compete at both national and international markets.*

*Proposed activities:*

- To increase enforcement on borders to ban illegal trade of noxious agricultural chemical products. In this respect, the customs shall be subject to informative sessions about the types of chemical products that are legally banned by the Ministry of Agriculture;
- To set a national agricultural agenda (to be prepared by the Ministry of Agriculture);
- To seek a better promotion and understanding among farmers of the governmental economic support initiatives;
- To undertake assessment studies about the environmental impact of existing and future agriculture Projects on the coast and ensure their monitoring;
- To control the excessive application and use of agricultural chemicals such as fertilisers, pesticides and insecticides through applying appropriate legal texts and enforcing site monitoring;
- To train farmers on the application of good agricultural practices such as modern irrigation techniques, organic farming, adequate picking and packaging, etc.;
- To provide farmers with required technical assistance to help them grow new types of plantation.

*Strategic option: To provide economic incentives to landowners in an attempt to preserve the remaining coastal plains that serve as socio-economic, landscape and environmental spaces.*

*Proposed activities:*

- To assist landowners in preserving the remaining agricultural plains located on the coast by providing them with necessary financial and technical assistance;
- To publicise information about governmental economic assistance programmes such as “Export Plus”;
- To encourage the development of agro-tourism activities that go along with the agricultural nature of the area;
- To monitor the replacement of some agricultural plantations by others (such as replacement of citrus orchards by banana plantation) and inform farmers about the medium to long-term risk of implementing such an activity without being endorsed by the appropriate studies.

*Policy implementation at short term (within 5 years):*

- To increase enforcement of concerned governmental bodies on the territorial borders to ban illegal trade of noxious agricultural chemical products *(regulatory action);*
- To set a national agricultural agenda on a yearly basis (to be prepared by the Ministry of Agriculture) *(policy action);*
- To train farmers on the application of good agricultural practices *(training action)*
- To encourage the development of productive activities that go along with the agricultural nature of the area *(regulatory and financial actions);*
- To seek a better promotion and understanding among farmers of the governmental economic support initiatives *(awareness action).*

*Policy implementation at medium term (in 5 to 7 years time):*

- To assess the environmental impact of existing and future agriculture Projects on the coast and ensure their monitoring *(technical action);*
- To monitor the replacement of some agricultural plantations by others (such as replacement of citrus orchards by banana plantation) from social and economic points of view *(technical and financial action).*

*Policy implementation at long-term (in 10 years time):*

- To preserve the remaining agricultural plains located on the coast through releasing necessary legal texts *(policy and regulatory action).*

**Fishery Sector**

The fishery sector needs particular attention from the government to enhance and upgrade its situation at the national level. To achieve this goal, a series of options are proposed:

*Strategic option: To consider the fishery sector as a national economic segment of equal importance to agriculture and tourism. Accordingly, a set of regulatory and institutional measures are either enforced or formulated.*

*Proposed activities:*

- To update laws and regulations regarding the application of fishing techniques and equipment (for instance, to prohibit the use of dynamites, prohibit the use of nets with small mesh size, etc.);
- To promote the social heritage of the fishery industry. Accordingly, to build up economic supportive programmes for the protection of fishery resources and industry;
- To control illegal activities by enforcement of coast guards monitoring duties; coastal specific, regulatory, institutional;
- To devise a programme similar to "EXPORT Plus" that would regulate and promote local fish production;
- To assist fishermen community with basic social requirements such as social security;
- To monitor fishing activity at municipal level;
- To establish programmes to monitor coastal area activities that lead to the degradation of the water quality, and consequently impact the fish communities.

*Strategic option: To improve the transfer of technology regarding fishing technologies and the know-how to the fishermen in order to ensure product competitiveness and conservation of fishery resources.*

*Proposed activities:*

- To carry out specialised capacity building programmes to fishermen being members of Syndicates;
- To support fishermen syndicates in establishing regional information centres (one centre for every Mohafazat) used and accessed by wide public and more specifically by fishermen themselves.

*Policy implementation at short term (within 5 years):*

- To enforce laws and regulations regarding the application of fishing techniques and equipment *(legal action);*

- To build capacities of fishermen on new methods and techniques in fishing *(training and financial action);*
- To provide fishermen with economic incentives to assist them in upgrading their fishing equipment (nets, boats, others) *(regulatory and financial action);*
- To assist fishermen communities with basic social requirements such as the social security *(policy and regulatory action).*

*Policy implementation at medium term (in 5 to 7 years time):*

- To support fishermen syndicates in establishing regional information centres about the fishery industry in Lebanon *(regulatory and financial action);*
- To regulate fishing import activity and to promote local fish production *(regulatory action).*

*Policy implementation at long-term (in 10 years time):*

- To promote the social heritage of the fishery industry. Accordingly, to build up economic supportive programmes for the protection of fishery resources and industry *(regulatory action).*

**Cultural Heritage**

A range of choices need to be taken in order to reach the objectives of the strategy for integrated management of cultural resources at the national, sub regional and local levels such as:

*Strategic choice: To develop a wider knowledge of the cultural resources of the coastal area, with the purpose of identifying the nature and scale of the resources available in order to better assess management requirements.*

*Proposed activities:*

- To launch a survey evolving the entire coastal area for the evaluation of the resources.

*Strategic choice: To develop a significant assessment of the value, condition and potential of these assets, in order to identify the type, explain and understand the value and significance of the various categories of cultural heritage, its state of preservation and its potential for interpretation and economic development.*

*Proposed activities:*

- To conduct significance assessment of the various classes and types of heritage. Assess importance and value, levels of preservation, physical decay, damage from human and natural causes, demands for new uses and exploitation of the cultural resources as well as the limitations of the historic environment.

*Strategic choice: To develop prescriptions for the management of cultural resources, in order to develop plans for the protection, conservation and management.*

*Proposed activities:*

- To draft management options for planning, developing legal instruments for protection, proposing incentives for resource conservation and use based on the definition of priority areas and the proper assessment of significance and conservation needs.

*Strategic choice: To increase awareness in and interaction with the rich heritage resources of the coastal area at the national and municipal levels.*

*Proposed activities:*

- To launch awareness campaigns and regular programmes and events in coastal areas that enhance interaction between local communities and the collective heritage.

*Strategic choice: To balance development and the need to upgrade the quality of the historic environment, as a step to monitor and direct development so that its impact on the preservation and significance of the historic environment is minimised.*

*Proposed activities:*

- To re-evaluate planning regulations and development Projects under the light of management requirements;
- To identify and list conservation areas within historic coastal urban centres and develop case-related planning regulations and rehabilitation schemes within these areas.

*Policy implementation at short term (within 5 years):*

- To inventory, assess and disseminate knowledge of significance and value of cultural heritage of the coastal area *(awareness action)*;
- To identify and start implementing priorities in cultural resource protection, conservation and training *(regulatory action*);
- To draft the new legislation for cultural heritage *(legal action);*

*Policy implementation at medium term (in 5 to 7 years time):*

- To launch awareness campaigns among local inhabitants and on a national scale *(awareness action);*
- To carry-out regular maintenance programmes and enhance research and documentation *(technical action);*
- To ratify and enforce legislation for cultural heritage *(legal and regulatory actions);*
- To develop the cultural heritage industry through involving local populations in the heritage management process *(financial and awareness actions).*

*Policy implementation at long-term (in 10 years time):*

- To characterise the historic environment, review and develop conservation programmes and sustainable schemes for intangible heritage development. Not listed in proposed actions *(regulatory action).*

**Sustainable Tourism**

Alternative forms of tourism are increasingly appreciated by nationals and tourists. However, this new tourism requires a shared and balanced distribution not to be restricted to specific regions or sites. The following strategic options are proposed of specific relevance to coastal areas:

*Strategic option: To promote alternative tourism in general and ecotourism in particular as a mean to encourage sustainable development, creating an economic justification for the preservation of natural resources.*

*Proposed activities:*

- To carry out a market survey to assess the flow of supply and demand regarding tourism coastal products;
- To assess the coastal resources potentially used as alternative tourism products and services;
- To carry out a series of workshops that demonstrates the economic value and significance of coastal alternative tourism versus the conventional tourism forms.

*Strategic option: To assess, improve and promote the alternative tourism sector.*

*Proposed activities:*

- To accelerate the promulgation of the ICAM law to preserve through legislation the remaining natural beaches and agricultural features of coastal plains;
- To improve tourism infrastructure, such as road network, taking into account that such infrastructure shall be designed in a way that would avoid crossing and thereby destroying the unity and uniqueness of the surrounding area;
- To improve tourist superstructure, including motels, hotels, restaurants, by instating among other environmental quality label for the tourism industry;
- To set signs and informative billboards guiding to and explaining about sites and spots of high sustainable tourism relevance;
- To establish regional information centres to explain and expand information about sustainable tourism products.

*Strategic option: To raise responsiveness of both stakeholders and wide public in coastal areas on the importance of alternative tourism as an increasing economic market whether regionally or internationally.*

*Proposed activities:*

- To organise campaigns and forums designed to specific groups including central and local authorities, private sector, and local communities, on the importance of investing in Projects meeting environmental and socio-economic standards;
- To disseminate more information about economic programmes such as KAFALAT that could provide assistance to local groups and private sector willing to invest in Projects associated to alternative tourism;
- To highlight the importance of alternative coastal tourism for coastal communities through seminars, field visits, workshops, etc.;
- To establish a national information network on alternative tourism sites, including in coastal areas.

*Policy implementation at short term (within 5 years):*

- To preserve through legislation the natural resources of potential touristic use, namely the natural beaches and the agricultural coastal plains *(legal action);*
- To carry out a market survey to assess the flow of supply and demand regarding tourism coastal products *(technical action);*
- To organise campaigns and forums on the importance of investing in Projects meeting environmental and socio-economic standards *(awareness and informative ac*tion).

*Policy implementation at medium term (in 5 to 7 years time):*

- To improve touristic infrastructure such as road network, wastewater and solid waste treatment plants, etc. *(regulatory and financial action);*
- To improve touristic superstructure, including information centres, motels, hotels, restaurants, etc. *(regulatory and financial action);*
- To provide incentives to local groups and private sector willing to invest in Projects associated to alternative tourism *(regulatory and financial action).*

*Policy implementation at long-term (in 10 years time):*

- To establish a national information network on alternative tourism in Lebanon *(regulatory and information action).*

**Inter-sectoral Strategy – at the Socio-economic Level**

As one can observe from the diagnosis, the coastal area plays a crucial socio-economic role since more than 65% of the population inhabits coastal towns and villages. Furthermore, none less similar percentage of economic activities reside within this area. Accordingly, it is important to specifically address the socio-economic aspect due to its significance towards reaching an integrated coastal area management.

The following strategic socio-economic choices are identified as priorities, the main ones call for halting rural exodus and immigration, and, for the preservation of both natural and cultural heritage.

*Strategic choice: To halt rural exodus and immigration in coastal towns and villages through creating a rural economy rich in job opportunities.*

*Proposed activities:*

- To provide farmers and private owners woodlands with financial assistance to wisely invest in coastal agricultural and woodlands potentials;
- To provide coastal-related agro-food industry with economic incentives (subsidies, export facilities, etc.) to compete and sustain at national level;
- To renew fishery techniques and methods that would not affect marine ecosystem;
- To encourage small scale alternative tourism coastal Projects that would create job opportunities in villages.

*Strategic choice: To ensure satisfactory life quality standards in coastal rural areas based on the preservation of the natural and cultural heritage.*

*Proposed activities:*

- To carry out studies and roundtables at municipal and regional levels, aiming at assessing the situation of and the socio-economic significance of natural, cultural and landscape heritage in coastal areas;
- To encourage public authorities and non-governmental organisations to create cultural and recreational activities in their respective coastal areas, by providing the necessary financial and logistic support**;**
- To organise awareness programmes aiming at increasing local communities awareness about the importance of conserving natural, cultural and landscape heritage for socio-economic benefits.

*Strategic choice: To undertake policy-oriented initiatives aiming at ensuring decision-making commitment towards the preservation of the socio-economic assets of the coastal area.*

*Proposed activities:*

- To obtain a clear commitment from political authorities to favour increasing the value of agricultural and agro-food potentials of the country recognised as one of the main comparative advantages, through:
  - organising a series of stakeholder workshops at municipal level to present the positive revenues from master plans, and for local communities;
  - organising a series of stakeholder workshops at national political level to demonstrate the nature of the global actual demand towards natural spaces and tourism management, including landscape, leisure areas and recreational areas.

*Strategic choice: To propose green economic incentives that would assist private sector and local communities in coastal areas in upgrading their living standards.*

*Proposed activities:*

- To uphold and publicise the use of national economic assistance programmes such as "Export Plus" and "Kafalat";
- To design specific incentives targeting small and medium enterprises to assist them upgrading their industrial units and related machinery to fulfil sustainable development parameters;
- To establish a joint control unit between the Ministry of Industry and the MoE to implement "Polluter Pays Principle" on the polluting industries;
- To prepare a financial proposal to be submitted to the Ministry of Finance that would entail design and approval of local taxes to finance environmentally-friendly initiatives at coastal local level;
- To design a national programme on coastal sustainability indicators where the totality of coastal towns and villages participate to clearly expose the beneficial effects of sustainable development as well as the negative impacts of the anarchic development.

*Policy implementation at short term (within 5 years):*

- To create job opportunities aiming at reducing the rates of exodus and immigration in coastal areas (regulatory, economic and financial actions);
- To further publicise the use and application of the national economic assistance programmes to reach the maximum of beneficiaries(information and awareness action);
- To induce changes in the decision-making discourses and information flow to favour increasing the preservation of coastal natural, cultural and landscape heritage in the context of economically viable planning processes (regulatory and awareness actions);
- To assess and disseminate knowledge about the socio-economic significance of natural, cultural and landscape heritage of the coastal area (technical, awareness and information levels);
- To increase awareness of coastal communities on the importance of preserving coastal heritage for long-term economic benefit purposes (awareness and information levels);
- To apply the "Polluter Pays Principle" (regulatory and financial actions).

*Policy implementation at medium term (in 5 to 7 years time):*

- To empower local authorities with economic tools aiming at boosting up their local funds designed to sustainably finance environmentally-friendly initiatives *(regulatory, awareness and information action);*
- To develop agricultural and forest potentials as well as the agro-food industry in a sustainable manner (*regulatory and financial actions*);
- To regulate and empower the fishery industry as one of the main national major economic sectors (*regulatory and financial action*).

*Policy implementation at long-term (in 10 years time):*

- To review and propose integrated socio-economic programmes, that would include institutional, regulatory, and implementable steps, leading to ensure the viability and preservation of the coastal area *(regulatory and technical actions);*
- To draft a national economic legal framework based on sustainable development concept *(legal action).*

**Information Dissemination and Community Involvement**

As it was highlighted in the diagnosis overview, accessing information and early involvement of the local communities may undoubtedly lead to a better implementation of management schemes. Local participation is crucial in the following issues:

- How to deal with the complexity of focusing on one sector of development (including environment) and link it to social and economic needs that are of equal priority to local coastal communities;
- How to generate interests, structures and momentum to encourage people to participate more in their community's development, making use of expert information and advice as well community's members aspirations and potentials;
- How to effectively develop communication channels between municipalities, local community, media, and others, to enhance understanding and facilitate joint group initiatives;
- How to best involve all stakeholders and to ensure that all voices are heard (political parties, age groups, syndicates, etc.);
- How to assist municipal councils and local active groups to mobilise resources in order to diversify funding base, and at the same time empower them to advocate for more public support;
- How to lobby the Lebanese government to lobby for the implementation of ratified international conventions, especially those calling for municipality engagement and local participation to coastal management issues.

Accordingly, the following strategic objectives and related actions are recommended:

*Strategic choice: To create practical linkages between environment and socio-economic development relevant to coastal resources.*

*Proposed activities:*

- To design holistic ICAM Projects that reflect all development needs including income-generating activities related to the coast such as fishing, agriculture, alternative tourism (archaeology and beaches);

- To propose sustainable development programmes that target municipalities or group of municipalities such as National Local Agenda 21, a second phase of CAMP, etc.

*Strategic choice: To diversify channels and opportunities that encourage joint initiatives in the coastal community.*

*Proposed activities:*

- To support small active groups in communities through training workshop, start-up funds and linkages with other groups;
- To use different forums to engage stakeholders (such as community halls, NGO centres, etc.).

*Strategic choice: To create communication channels between local authorities and all coastal community members.*

*Proposed activities:*

- To conduct joint meetings and workshops between municipal council and the rest of the community;
- To encourage youth groups to participate in sustainable development initiatives. These could be made possible through seminars, awareness programmes, field visits, and other aspects of participation.

*Strategic choice: To develop the capacity of coastal municipalities to seek all relevant information and resources to implement developmental ideas.*

*Proposed activities:*

- To establish local database;
- To organise local expertise meeting sessions involving national experts, local community and municipal councils to discuss thematic issues of relevance to coastal sustainability;
- To support municipalities in resource mobilisation through training, public relations, and income-generating Projects;
- To establish coastal regional networks that encourage the exchange of ideas and experiences with other institutions and neighbouring communities on coastal issues and initiatives.

As it was mentioned in the beginning of this section, local participation does not require a time frame for implementation. It is rather a continuous process, a learning process that is developed updated along with activities implementation.

## Role of Government Entities in Achieving Sustainable Coastal Development

In order to ensure a better implementation of cross-ministerial activities, comprehensive and transparent tasks must be allocated to, and closely co-ordinated by public entities. In that perspective, below are highlighted the respective roles that relevant Governmental entities should endorse to help achieve sustainable coastal development.

As it was previously exposed in the section overviewing the coastal zone diagnosis, central and local authorities' competencies and mandates overlap and duplicate. Up to now, overcoming the overlap was endeavoured through instituting higher councils such as the Higher Council for Urban Planning, or via establishing governmental committees such as the Regional Health Committees. These attempts are nonetheless limited due to the absence of a common national

planning process that emphasises upon establishing tight co-ordination between the governmental institutions. In addition, legal enforcement shall be strengthened at all levels.

There are two levels of institutional arrangements to be achieved: first, at the level of inducing some changes within each ministry, while the second calls for finding an overall facilitating mechanism among ministries.

The main strategic objective in that regard is to establish solid co-ordination among ministries through endorsing and activating inter-ministerial committees within existing Higher Councils. Indeed, at inter-ministerial level, no additional higher councils will be proposed as this would create unnecessary additional co-ordination layers that ministries wish to avoid for the moment. Accordingly, it is suggested that the proposed inter-ministerial activities will be co-ordinated and facilitated through the Higher Council for the Environment (HCE).

In this respect, it is to highlight that CAMP Project proposed to expand the competencies of the Higher Council for the Environment to manage the Lebanese coastal area. The Council should gather, among others, representatives of ministries, national syndicates, and NGOs. To avoid the constitution of an additional higher council to the existing councils already formed in the country, supplementary tasks are proposed for the modified Higher Council of the Environment, which was created by law No. 444 (2002) within the Law for the Environment.

The Projected tasks are:

- to watch over the preservation and management of coastal area and river basins;
- to preserve the natural sites and the ecological balance of the coastal zone and river basins;
- to establish general policies that go along with the above-mentioned objectives;
- to ensure co-ordination among ministries, public administrations, organisations and various authorities in charge of managing and watching over the protection of coastal area and river basins;

Moreover, the proposed tasks of the Council are:

- to submit propositions and recommendations pertaining to the coastal area and / or river basins to the competent authorities as well as to public and private authorities;
- to request, gather and co-ordinate information pertaining to the coastal area and / or river basins to the various competent authorities;
- to participate to the establishment of a master plan that concerns any zone within the boundaries of the coastal zone and river basins;
- to implement a Strategic Environmental, Social and Economic Assessment related to the regulations and decisions pertaining to the coastal area and / or river basins prior to their adoption;
- to appeal to judiciary and administrative jurisdictions and to file a civil action in order to end any act, Project or measure having an adverse impact on the coastal areas and / or river basins or likely to contravene to the dispositions of the present law;
- to settle any competence conflict between ministries and public administrations concerned by the coastal area and river basin management.

Awaiting for the higher council of the Environment to become operational, central and local administrations ought to really fulfil actions and measures to achieve sustainable coastal development.

A second strategic objective lies in the clarifying within ministries of their respective responsibilities towards ICAM, and potentially introducing some changes in their prerogatives to improve co-ordination.

The following table provides a clear proposal of respective responsibilities within and between ministries as regards the development and implementation of an ICAM strategy.

### Measures at institutional, legal, regulatory levels to improve the development, adoption and implementation of ICAM

Based on the strategic objectives and activities, the following proposed activities are thereby grouped into sectoral measures assigned per ministry or group of ministries.

**Table 2: Proposed measures aiming at reducing institutional overlapping**

| Sector | Governmental Entity |
|---|---|
| **Environment** | *Ministry of Environment*<br>▪ Propose the law on Integrated Coastal Area Management (ICAM) to the Council of Ministers for adoption (legal action)<br>▪ Enforce the application of EIA procedures on all types of developmental Projects (legal action)<br>▪ Enforce the compliance of industrial settlements with national environmental parameters (legal action)<br>▪ Encourage integrated solid waste management practices (sorting, recycling, re-use, composting, etc.) (financial and incentives actions)<br>▪ Lobby for the implementation of the waste water treatment plants all along the coast (policy action)<br>▪ Encourage the declaration of coastal reserves (policy action)<br>▪ Empower local communities and local groups with information on environmental issues and environmental protection (policy action)<br>*Council for Development & Reconstruction*<br>▪ Adopt the national land use planning (policy action)<br>▪ Apply EIA on nationally and internationally funded Projects (legal action)<br>▪ Accelerate setting up waste water treatment plants, solid waste management plants, etc. (financial and incentive actions)<br>▪ Impose an environmental protection clause on all community development Projects (funded internationally and channelled through CDR) (policy action)<br>▪ Stop implementing infrastructure (coastal highways mainly) that negatively affect the natural, cultural and agricultural heritage (policy and regulatory action)<br>*Ministry of Public Transport*<br>▪ Monitor the marine activities (shipping, transportation) to halt any adverse reaction on marine biodiversity (oil spill, other hazards) (regulatory action)<br>▪ Improve the regulatory enforcement measures all along the coast (regulatory action)<br>▪ Protect and rehabilitate the public maritime domains (policy and regulatory actions)<br>▪ Establish more public beaches and rehabilitate existing ones (regulatory action)<br>*Ministry of Agriculture*<br>▪ Provide protection through legislation to coastal agricultural plains (regulatory and policy actions)<br>▪ Provide farmers with financial and technical incentives to enable them conserving their lands for agricultural purposes (incentive and financial actions)<br>*Coastal Local Authorities*<br>▪ Respect environmental regulations (regulatory action)<br>▪ Monitor periodically coastal resources (status of beaches, treatment plants, sewage networks, violations on coastal resources, etc.) (regulatory action) |
| **Agriculture** | *Ministry of Agriculture*<br>▪ Provide farmers with financial and technical assistance to enable them investing their lands (financial and information actions)<br>▪ Promote IDAL, EXPORT PLUS, etc. (awareness and information actions)<br>▪ Carry out periodical training and guidance programmes on pesticides usage, irrigation techniques, etc. (awareness and information actions)<br>▪ Promote organic farming (financial and information actions) |

| Sector | Governmental Entity |
|---|---|
| **Fishery** | *Ministry of Agriculture*<br>▪ Enforcing legislation (legal action)<br>▪ Provide training to upgrade fishermen skills (training action)<br>▪ Provide fishermen with social security (regulatory action)<br>*Ministry of Public Transport*<br>▪ Upgrade / rehabilitate harbors (policy and regulatory action)<br>▪ Enforce and implement regulations (regulatory action)<br>*Fishermen Syndicates*<br>▪ Lobby to enhance the social security of their respective members (lobby action)<br>▪ Lobby for obtaining technical assistance and renewal of their equipment (lobby action)<br>▪ Co-ordinate with local and national NGOs to conceive and apply for funding aiming at enhancing the fishermen social, economical and technical situation (lobby action)<br>*Coastal Local Authorities*<br>▪ Undertake surveillance and enforcement of the regulations (regulatory action)<br>▪ Collaborate further with the police coastguard (regulatory action) |
| **Urban Planning** | The elaboration of urban master plans comes under the jurisdiction of the Directorate General of Urban Planning. These master plans are firstly approved by the Higher Council for Urban Planning, which members are composed of general directors of concerned ministries (Interior, Environment, Public Works, etc.) as well as other authorities (CDR, Housing, etc.). Then, these plans are approved and decreed, and as a response to the delays in signing the decrees, a circular of the DGUP authorises the application of master plans when approved by the Higher Council of Urban Planning.<br>*Directorate General of Urban Planning*<br>▪ Promote and enforce the implementation of national, regional and local master plans (policy and regulatory actions)<br>▪ Halt granting permitting licenses to constructions, buildings, etc. not complying with sustainable coastal development principles (regulatory action)<br>*Council for Development & Reconstruction*<br>▪ Adopt the national land use planning (regulatory action)<br>▪ Apply EIA on nationally and internationally funded Projects (legal action)<br>▪ Accelerate setting up waste water treatment plants, solid waste management plants, etc. (regulatory action)<br>*Ministry of Environment*<br>▪ Apply EIA on nationally and internationally funded Projects (regulatory action)<br>▪ Lobby for the execution of the waste water treatment plants, solid waste management plants, etc. (regulatory action)<br>*Coastal Local Authorities*<br>▪ Establish an urban database that would help the municipality better plan the space and available resources (regulatory action)<br>▪ Stop granting permits to constructions not presenting the minimum requirements of aesthetic, hygienic, environmental and urban requirements;<br>▪ Undertake actions to halt urban encroachment on agricultural and archaeological zones (regulatory action)<br>▪ Plan for the implementation of public squares, public gardens and youth spaces (regulatory action)<br>▪ Involve and inform local communities on the importance of abiding by urban planning and land-use management principles (awareness and information actions) |
| **Water Resources** | Several institutions are involved in water resources management, but yet, the responsibilities of these institutions many times overlap, leading to the lack of proper implementation of their mandates. These include primarily the Ministry of Energy and Water (MoEW), the newly established water and wastewater establishments, the Council for Development and Reconstruction (CDR), the Ministry of Environment (MoE), the Ministry of Public Health (MoPH), and the Ministry of Public Works and Transport (MoPWT). |

| Sector | Governmental Entity |
|---|---|
| **Cultural Heritage** | *Ministry of Culture – Directorate General of Antiquities*<br>Currently the respective institution responsible for the safeguard and management of some of the cultural resources of the country. As stated before, the Directorate is limited in scope and mandate because of the framework of the Antiquities' Legislation which it is responsible for enforcing, because of its limited and not fully suitable human resources and because of conflicts of interests with other government institutions such as with the Directorate of Urban Planning.<br>For the strategy to succeed, the Directorate General of Antiquities will have to undertake a number of critical steps:<br>▪ Reform the current Antiquities' Law making it wider in scope so as to include other classes of heritage and to cope with the modern requirements of cultural resource management (legal action)<br>▪ Reassess its mandate under the light of the new Antiquities' Legislation or, more appropriately, the new Cultural Heritage Legislation (legal action)<br>▪ Reform its administrative structure and introduce fresh and qualified expertise within its human resources body (regulatory action)<br>▪ Develop a strategy for the management of the Cultural Heritage of the coast (regulatory action)<br>▪ Co-ordinate with other government institutions such as the Ministry of Environment and the Ministry of Public Works (regulatory action)<br>▪ Plan and implement conservation and cultural awareness programmes (planning and regulatory actions)<br>*Ministry of Environment*<br>Some of the major tasks it needs to undertake in the framework of the strategy are:<br>▪ Team-up with the Ministry of Culture, the Directorate General of Antiquities to identify and protect cultural areas of natural significance in coastal zones (regulatory action)<br>▪ Incorporate the assessment of the historic environment into the regular State of the Environment Report (information action)<br>▪ Assess and monitor the impact of environmental Projects such as agricultural development Projects, water resource development, etc., on the authenticity and preservation of the historic environment in the coastal zone (technical and regulatory actions)<br>*Ministry of Public Works*<br>Because of its large part in affecting change in the environment, the Ministry should be responsible for the following tasks:<br>▪ Co-ordinate Project formulation with the Ministry of Environment and the Directorate General of Antiquities in order to assess the impact of such Projects on the natural and historic environment in coastal zones (regulatory action)<br>▪ Evaluate the feasibility of large infrastructure Projects taking into consideration Environmental Impact Assessments and Cultural-Archaeological Impact Assessments (technical and regulatory actions)<br>*Directorate of Urban Planning*<br>▪ Co-ordinate Project formulation with the Ministry of Environment and the Directorate General of Antiquities in order to assess the impact of such Projects on the natural and historic environment in coastal zone (regulatory action)<br>▪ Develop planning regulations and codes that really protect the integrity and settings of cultural areas and assets. This is to be done in co-ordination with the Directorate General of Antiquities (regulatory action)<br>*Coastal Local Authorities*<br>▪ Assess their local cultural potential and inform the Directorate of any assets in critical condition (technical and regulatory actions)<br>▪ Assign a special member or body within the Municipality for cultural heritage management and follow-up with the Directorate of Antiquities (organisational action)<br>▪ Organise heritage awareness campaigns, contribute to the sustainable management of the heritage resources of their municipality (awareness and information actions)<br>▪ Link-up with other municipalities in the area in order to improve and share experience (awareness and information action)<br>▪ Monitor the condition of the historic environment and report to the concerned authorities (regulatory action) |

| Sector | Governmental Entity |
|---|---|
| **Sustainable Tourism** | *Ministry of Environment*<br>▪ Encourage NGO initiatives in raising awareness and promoting participation of local communities in sustainable coastal zone initiatives (awareness and information action)<br>▪ Carry out in collaboration with the Directorate of Antiquities, the Ministry of Tourism and coastal local authorities awareness programmes and campaigns on the importance of the natural, cultural and landscape heritage (TV, radio, newspapers, etc.) (regulatory action)<br>▪ Encourage the declaration of further coastal nature reserves, and promote positively the concept of nature reserves among the local communities (regulatory, awareness and information actions)<br>*Ministry of Tourism*<br>▪ Launch a yearly competition on the best sustainable coastal Project (awareness and information actions)<br>▪ Develop information centre and materials to promote the coastal resources (cultural, natural, landscape, others) (awareness and information actions)<br>▪ Assist legally the eco-tour operators (provision of licenses, etc.) (legal actions)<br>*Ministry of Agriculture*<br>▪ Promote and support organic farming (regulatory action)<br>*Ministry of Public Works*<br>▪ Enhance road networks and lightening systems (regulatory action)<br>*Coastal Local Authorities*<br>▪ Preserve local coastal assets from any vandalism and degradation (regulatory action)<br>▪ Stop granting construction permits neighbouring cultural, natural and landscape heritage (regulatory action)<br>▪ Impose fines and taxes on Projects effecting negatively the local resources (regulatory and financial actions)<br>▪ Request the implementation of infrastructure favourable to the implementation of sustainable tourism initiatives (waste water treatment plants, solid waste management plants, etc.) (regulatory action)<br>▪ Encourage public community participation and involvement in planning, promoting and benefiting from sustainable tourism initiatives (awareness and information actions) |
| **Information dissemination and Participatory involvement** | *Ministry of Environment*<br>▪ Promote sustainable development principles (policy action)<br>▪ Disseminate information about international obligations related to sustainable coastal development (awareness and information actions)<br>▪ Promote the implementation of Local Agenda mechanisms at local level (regulatory action)<br>▪ Organise training and awareness programmes targeting local community representatives about importance of preserving coastal resources (training, awareness and information actions)<br>*Ministry of Social Affairs*<br>▪ Use the Social Centres disseminated in towns, cities and villages to promote concepts of sustainable coastal resources, and importance of preserving coastal assets for the benefits of social living conditions (regulatory, awareness and information actions)<br>*Coastal Local Authorities*<br>▪ Encourage the implementation of Local Agenda principles (regulatory action)<br>▪ Encourage and apply dialogue and participation of local communities in drafting and implementing municipal development plans (awareness and information actions)<br>▪ Promote group initiatives aiming at conserving coastal resources (awareness and information actions) |

# Socio-Economic Analysis of CAMP Area

The following report provides an overview of the socio-economic importance of the coastal area, followed by a summary diagnosis for Damour, Sarafand and Naqoura. It concludes with a set of recommendations to be implemented at short, medium and long term.

## General Overview

The Lebanese coastal area is considered as both the richest area and most sensitive area of the country. It constitutes a privileged location where converge the economic activities that are correlated to exchange of goods and services, such as import-export trade activities, industrial activities related to flow of imported raw materials or to export markets. The importance of commercial activities has converted the coastal cities all through the previous decades into main economic decision-making centres. Between 1975 and 1990, the coastal area was severely affected by the consequences of the Lebanese civil war, prolonged by the Israeli occupation until the year 2000.

CAMP area did not make exception to this case.

### Fast Urban Expansion

In CAMP area, the urban development is exclusively in function of the presence of an important economic activity. Accordingly, the rural area has served so far as a simple accommodation place to a population which economical activity is tight to the city. Accordingly, no value has been attributed to the existence of agricultural lands, or even to natural or landscape features. This is the case of Beirut suburbs as well as the northern and eastern entrances of Saida. Furthermore, in many coastal sections, this urban expansion spreads out beyond the villages boundaries and develops into a continuous stretch all along the main transportation roads. One of the main consequences of this urban expansion is that it generates important overcharges related to infrastructural costs due to the uncontrolled spreading out of unrestrained populated zones.

### Agriculture Threatened by Urban Encroachment

A major strength of CAMP area resides in its populations who still survive from agriculture, and maintain preserving the agricultural lands as long as these lands allow them to earn perceptible earnings. Such populations could be largely identified in Damour, and all along the area that separates Saida from Tyre and to Naqoura, further to the South.

The outcome of these two previously mentioned antagonistic powers, i.e. urbanism and agriculture, and which vary according to the fluctuations of agricultural and land rental revenues, has resulted into an urban encroachment which extends over a number of agricultural lands. This fact is noticed all along the southern Lebanese coast. The main problem facing the agricultural lands is naturally the irreversible character of their transformation into constructed properties. However, as long as a policy is not put in place to increase the agricultural revenues and valorise the secondary effects (touristic and land value of natural and agricultural landscapes), this encroachment will continue.

**Natural Areas under Extinction**

The development of the urban encroachment added to the infrastructural projects, the sand extraction and sea embankment had led among other consequences to:

- the disappearance of forests and some sand beaches;
- the disappearance of vegetal species;
- the space partitioning;
- the numerous nuisance (noise, sanitary, groundwater pollution, etc.) which provoke an increase of the fauna mortality;
- the imbalance of the coastal hydro-dynamism.

**Weakened Touristic Resources**

The degradation of the natural sites due to the establishment of cemented touristic compounds, the real estate projects as well as the creeping coastal privatisation are limiting the possibilities available to the Lebanese citizens to benefit from their heritage.

**Threatened Architectural and Archaeological Heritage**

The pillaging of archaeological wealth of Tyre all along the years of war and the destruction though less visible of the under-water ruins exposes the threats that affect the overall archaeological heritage of the area.

As for the architectural heritage, this was partially destroyed by the war, as it was the case of Damour, however it was mostly the lack of urbanism that contributed to its valorisation. Few homogenous architectural outfits are still found on the southern coast. These outfits strongly contribute to valorise their own different elements. The case of the souk of Saida is one of the last examples of the architectural heritage.

**Weakly Structured Industrial Development**

This observation is also valid to the northern part as well as to the southern par of the Lebanese section. However, the southern section is less marked by the industrial expansion.

## Potential of CAMP Area

### *Human potential*

**Strengths**
- Medium to strong demographic growth
- Educated elite
- Cultural traditions
- Strong attachment to the region
- Diaspora frequently ready to provide support
- Numerous cases of social success
- Proximity of large urban centres;
- Infrastructural transportation system rapidly taking place

**Weaknesses**
- Weak technical skills
- Poverty
- Illiteracy
- Political instability

**Opportunities**
- Return of displaced populations
- Movement towards leaving the cities
- Investors originating from the region in search for new possible investments

**Threats**
- Policy to decrease the value of traditional activities: agriculture, fishery, handcraft
- Centralisation of the main economic activities in the capital

### *The potential of the agricultural development*

**Strengths**
- Important agricultural surface areas
- Abundance of water resources
- Agricultural traditions
- Existence of exportation channels

**Weaknesses**
- Weak technical skills
- Land parcelling
- High costs of irrigation infrastructure
- Weak access to credit
- Weakness of transformable cultivations
- Weakness of regulatory measures for agricultural exchanges
- Weakness of marketing channels

**Opportunities**
- New possibilities to access the European market (Lebanese-European partnership)
- New possibilities to accede the markets of east Europe and central Asia

**Threats**
- Competitiveness of countries characterised by a less expensive labour or assisted agriculture
- Competitiveness of countries characterised by a stronger agricultural productivity

### *The potential of touristic development*

**Strengths**
- Sandy beaches still untouched
- Archaeological ruins of areas such as Tyre and Saida
- Agricultural and natural landscapes

**Weaknesses**
- Image of conflict
- Environmental degradation
- Coastal area privatisation
- Lack of hosting structure
- Political instability

**Opportunities**
- Diaspora return during summer
- Development of the internal tourism since the end of the war
- Development of the Arab tourism in Lebanon since 2001

**Threats**
- Competitiveness of neighbouring countries (Cyprus, Syria, Turkey, Israel)
- Short-term tourism (transit or short travelling)

### *The potential of industrial and commercial development*

**Strengths**
- Existence of major urban areas
- Harbour infrastructure
- Infrastructure linking the South to Beirut
- Investors are from the southern diaspora
- Costs of lands relatively high
- High number of labour

**Weaknesses**
- Absence of conventional industry
- Low-skilled labour
- Image of conflict and political instability

**Opportunities**
- Governmental mechanisms designed to attract investments
- Reconstruction of the region
- Opening of the European market

**Threats**
- Competitiveness of the neighbouring countries (Cyprus, Syria, Turkey, Gulf countries)
- Free-trade agreements

**Economic Consequences of the Current Urban Plans**

The disfiguration and standardisation of the Lebanese coast has had two immediate consequences. First, they cut short to the development of the internal Lebanese tourism. They also prevent the European summer holidaymakers as well as those attracted by the Lebanese beaches to go for other Mediterranean destinations characterised by a preserved coastal area and a protected nature. The threats resulting from the current urban management plans could be grouped into three parts:

- Preserved but threatened areas to be protected – this includes:
  - The Kasmiyeh plain and Litani valley;
  - The beaches and archaeological sites extending to the south of Tyre, between Tyre and Rachidyeh Palestinian Camp;
  - The area extending between Rachidyeh and Ras Al-Ain, known for its water springs and agricultural landscapes;
  - Ras Al-Naqoura, a rocky promontory located to the extreme of the agricultural plain extending to the south of Tyre;
- Areas under degradation to be protected – this includes:
  - Damour plain;
  - Damour River Valley;
  - Ras al-Saadiyat Cap;
  - Mhayleeb coastal area.
- Degraded areas to be rehabilitated:
  - The area surrounding Saida: beaches located to the north threatened by the urbanisation and the touristic projects; seafront threatened by the coastal highway; sea serving as a dumping area;
  - Al-Zahrani Valley: industrial zone and old refinery area to be cleaned up.

## The Economic Arbitrations: Discussions on the Development Patterns

The Lebanese populations and particularly those living in CAMP area should clearly decide whether they intent to conserve the coastal resources to enable the future generations benefit from these resources and from the job opportunities generating financial revenues.

Agriculture makes part of these resources. Indeed, the land could produce indefinitely provided that applied techniques do not lead to soil depletion. If lands stay as local properties, agriculture could contribute to combat immigration and rural exodus.

Conversely, selling agricultural lands for the purpose of developing private investments is synonymous to immediate cash flow generated at the expense of the current land owners. This would also mean the disappearance for ever of agricultural lands, the movement being not reversible. In addition, and if the case of the three selected municipalities is taken, this matter shows that the three municipalities are characterised by poor populations, either due to war (Damour and Naqoura), or due to the absence of past development policies (Sarafand), these sales were probably carried out to the benefit of non-resident investors.

Moreover, and as it is the case of Damour, the vending of agricultural lands could constitute strong factors leading to demographic changes, as it was proved in neighbouring towns such as Jiyeh and Naameh. Moreover, if these lands are sold for touristic purposes, it should be clearly understood that nothing could force the newly comers to invest in employing local labour.

**The Arbitration on Wealth Distribution**

Job creation is an important condition to ensure a harmonious sharing out of wealth generated by the localities resources. A sea resort built on agricultural lands represents a certain loss of agricultural employments which are not necessarily compensated by new jobs inside the sea resort itself. Indeed, the sea resort owner has a multitude of reasons for not hiring staff and labour from the local community. Among these reasons, we can name:

- high cost of local labour compared to immigrated labour;
- working conditions required by local labour are obviously higher to those demanded by the immigrated labour;
- absence of Government control;
- interference of local political and administrative authorities into the enterprises context in favour to the local labour.

**The Arbitrations on the Types of Employment Opportunities**

CAMP populations should compare the types of employment generated by the different models of economic and social development. In this respect, one should know that job opportunities available in the context of tourism services are fairly rewarding in case it is assumed that sea resort owners accept to recruit staff out from the local population.

These job offers should be compared to those obtainable by the agricultural development: independent farmers, agricultural labour, agricultural engineers and consultants, merchants, transporters, agricultural equipment operators, technicians, etc., in addition to the job opportunities found in the agro-food industry.

**The Arbitrations Between Local and Foreign Populations**

In a country where the population seems to be ready to move from one location to another, it is astonishing that localities do not bet on the necessity to develop their own assets, i.e. to expand based on their comparative advantages. To run away from the cemented cities, the Lebanese people have effectively started to cover distances, reaching dozens of kilometres to discover green spaces, sea and mountains. The beaches of Tyre, Jiyeh, Batroun and Byblos are always full of sunbathers offering them the basic pleasures of nature, this for the great benefit of local populations.

As for the cultural heritage, one should mention that the success of the old Zouk Mikhael Centre, the constant crowd to the old port of Byblos in addition to the success of the summer festivals of Deir Al-Kamar is supplied by the internal tourism.

Therefore, these exchanges between Lebanese areas, known also as internal tourism, are increasingly growing as the recreational activities linked to natural and cultural heritage are developed. This observation becomes evident nowadays and should constitute a strong factor in favour of heritage conservation since these exchanges are economically profitable and generate revenues.

**The Financial Revenues of the Municipalities**

The legislative texts which govern the municipal revenues fall within the jurisdiction of three legal texts:

- the law No. 60 (12/8/1988);
- the decree No. 1917/ 1979 which defined the standards and rules of resources distribution relative to the “Autonomous municipal fund”;

- the decree No. 5595/ 1982 consisting in defining the accounting rules of municipalities not subject to the law of public accounting.

In addition, the decree-law No. 118/ 77 governing the municipal prerogatives approaches too the financial matters, but at the level of expenditure and budget management only.

**The Economic Instruments**

*The economic instrument at the disposal of agriculture and natural landscapes*

The economic instruments likely to contribute to the development of agriculture in CAMP area are numerous at the present time. Among these instruments, we can name:

- Bank loans provided to small and medium enterprises (SMEs) supplied by the government. The areas of concern are the following: agriculture, industry and tourism. The agency in charge of the assistance: KAFALAT. Maximum amount of the loan: 200,000$.
- Bank loans at soft interest rates provided by the government. The areas of concern are: agriculture, tourism and industry. Maximum amount: 15 milliards L.L.
- Government subsidy towards agricultural exports: programme “Export +” put into place by IDAL. Amount provided: 50$ to 100$ per ton according to the final merchandise destination.
- Micro-credits provided by various NGOs through EU financing. For instance, the Lebanese Institute for Social and Economical Development/ European Union, the socio-economic rehabilitation programme of displaced in Lebanon, etc.
- Establishment of the Economic and Social Development Fund with the assistance of the European Union. EU funds: 25M$; Government funds: 6M$. Objective: to provide assistance through NGOs to displaced populations and rural development, to finance small enterprises through micro-credits enabling the development of profitable economic activities as well as to finance community projects.

As for the protection of landscapes and natural resources, the following economic instruments are cited:

- The decree on public property (decree no. 8735/74). This decree is applicable to all environmental degradation including waste water discharge, open solid waste dumping, etc.
- The treatment of domestic waste and packaging. Actually this mechanism is not yet in place to favour the waste minimisation and recycling. In this respect, experience learned from Switzerland or Holland could be a first step in solving that issue.

*The economic instruments at the disposal of the industry*

The Lebanese industry benefits from a number of incentives and economic instruments aiming at increasing the development of southern regions. The same above-mentioned instruments are also applicable to the industrial sector. In addition, the following two programmes are cited:

- The loans of the European Investment Bank (EIB). These loans are managed by the Central Bank and activated through the local banks. They target the sectors of tourism and industry. Financing goes up to 50% of the total invested amount. Loan duration: 10 years including 2 years of grace period. Minimal amount: 50.000 Euros. Maximum amount: 2.500.000 Euros;
- Programme for industrial modernisation : 11 Million Euros for rehabilitating the Lebanese industrial SME;

- Fiscal exemptions over a period of 10 years according to a number of conditions linked to the value of the investment and the location of the industry (Decree-law No. 144/59).

*The economic instruments at the disposal of urbanism*

Resolving problems created by the uncontrolled urbanisation should target the entirety of CAMP municipalities. Among the solutions could consist of applying:

- a tax on non-occupied apartments;
- a tax on non-finalised constructions.

These two taxes are not available at this moment and should be the subject of a new law.

## Practical Case Studies: the Three Municipalities of CAMP Area

### Damour

Damour is a coastal town extensively covered with agricultural lands. Since the fifties, Damour inhabitants have converted their fertile plain many times, from planting mulberry trees to bananas and to a lesser extent into citrus trees. In the beginning of 70's, two types of activities were developed:

- the agricultural development taking place at the edge of urban areas;
- the urban development.

The main features of Damour are the following:

- the landscape (sea, sandy beaches, Saadiyate rocky promontory, river, etc.);
- spectacular panorama provided by the cultivated plain.

More than any other localities, the development of Damour was heavily affected by the Lebanese war. Inhabitants were forced to displace to other Lebanese regions or to even immigrate. The village was completely destroyed and the plain was heavily exploited by outsiders. The mid-nineties witnessed a partial return of Damour populations.

Unfortunately, the village reconstruction was carried out in an uncontrolled style. This explains the pitiful sight of the reconstructed locality, the existent urban disaster and the disfiguration of a traditional town even to the eyes of its own inhabitants.

On the other hand, the lack of interest showed by the state towards developing the agricultural potential has so far favoured the disappearance of the agricultural lands that are increasingly substituted by constructions. For instance, this lack of government interest is demonstrated by the passage of a highway of 6 roads over 3 km length, a disaster that corresponds to the loss of almost 30 hectares of agricultural lands in addition to a complementary damage caused by the constructions scattered alongside the main road on the agricultural lands.

At the moment, the status of the land is beyond doubt perceived as a development tool for the locality; and considerable efforts are deployed to elaborate urban management plans aiming at preserving the available resources, notably the agricultural resources, and to offer the new physical developmental spaces for future industrial activities.

The municipality of Damour is fully aware of the fact of transforming the village into a suburb to Beirut metropolitan at the expense of its own resources unless a policy is adopted to halt this transformation. This would concretely mean:

- the construction of new residential buildings on agricultural lands;
- the definitive disfiguration of the village;
- the loss of available resources.

It is to note that the Damour village and its agricultural plain were subject to a management plan dating back to 1968 and which follow the same logic. Indeed, the main factors for the village development are threatened by management plans dating back to an outdated time. The agricultural character of the plain and the unique landscapes of the locality have attracted the villas owners and thereby these resources are directly threatened by this attractiveness.

*The urgent actions*

The recommended actions are of two levels:

- *Regulatory actions:* they are actions that could be activated based on administrative decisions enacted by the Municipality of Damour or by the government.
- *Economic actions:* these are actions which are based upon using the economic instruments. The objective is to enable running the area by using indirect measures which impact the economic behaviour.

*The regulatory actions*

- *Agriculture and natural landscape:* It is advised to elaborate a land-use plan which imposes the utilisation of the Damour plain, i.e. the lands located to the west of the highway, for strictly agricultural purposes. In addition, agricultural lands located to the east of the old roads, actually non-built and presenting a territorial continuity are categorised into strictly agricultural usage.

  The Damour River Valley is preserved against all types of constructions. Its vocation as an agricultural valley is clearly confirmed.
- *Tourism:* The municipality is charged of managing and running the beach as well as other sites to be preserved. To the extreme south of the beach, the first land located beyond the river is classified as "agricultural zone". The agricultural character of the Damour plain and the Damour River Valley in addition to the public character of the beach should equally favour the implementation of a multitude of alternative tourism activities.

  The main key of success for any touristic development of a given locality is to reconstruct the historical nucleus of the Damour town which should be complemented by forcing the local community to abide to the management plan content. This latter should impose limitations to the height of constructions. A homogenisation of the reconstruction style should be equally examined as well.
- *The commercial activity:* A commercial zone shall take placed at the junction of the two roads: old coastal road and the Chouf road. This zone aims at developing the retail commercial activity to the benefit of the agricultural products, equipment and tools.
- *The industry:* The only industrial activities authorised in the areas close to the highway and old road as well are those activities designed for packaging and processing the agricultural products. They are clustered to the east of the old road and nearby the Chouf feeder. No agricultural lands will be converted into land on industrial lands. Non-polluting handcraft activities could be located inside the inhabited areas.

  Heavy industries are not permitted. The only permitted industries could be the high technology industries such as the BETZ project, a technological project currently implemented by an American company. This project is expected to provide an average of 5,000 job opportunities.
- *The residential zones:* A homogenisation of construction styles is required if a certain character is to be given to the locality.

*The economic instruments*

- *The economic instruments at the disposal of agriculture and natural landscape*;
- *The economic instruments at the disposal of the tourism sector:* Some economic instruments could be applied regarding the management and use of Damour beaches. We propose to impose fees on the:
  - cost of renting kiosks and straw huts;
  - cost of parking areas managed by the municipalities;
  - cost of bus tickets that transport tourists from parking areas to the beach.

  On the other hand, the development of hotels and restaurants inside the village could benefit from loans subsidised by the government in favour of touristic SME through KAFALAT (loans amount: 200.000$; actual interest rate with the subsidy: 2-3%).
- *The economic instruments at the disposal of the urbanism:* The majority of Damour buildings are still nowadays unfinished. The implementation of taxes on non-finalised buildings, non-occupied buildings, etc., should be applicable all over the national territory.

**Sarafand**

During the 60's and 70's, Sarafand used to be one of the rare localities in the country to have a glass artisan factory. In addition, the Lebanese citrus production, main products of the Sarafand plain, find outlets in the Arab markets. The development of the internal tourism is also favoured by the proximity of the town to the seashore.

In addition, the geographical position of Sarafand at mid-road between Saida and Tyre converted the town into a commercial centre which feeds the surrounding localities.

All of these factors enabled Sarafand to witness a particular prosperity and consequently to settle down the inhabitants within their villages. This village did not observe any rural exodus neither immigration.

*The threats*

- *Anarchic urbanization of the coastal area:* The urban disaster is due to many reasons. To the east of the road, an urban encroachment over the agricultural is slowly developed. To the west of the road, and all along the sea road, and from the northern edge to the southern edge of the village, an intensive commercial and industrial activity (of small size) was developed during the years of war. Added to that:
  - the cemented multi-level expansion of old restaurants in the area of *Khayzarane*;
  - the development of private tourism compounds to the border of the remaining beaches prohibiting the free access to the beach;
  - the creation of three fishing harbours on important portions of the coast, without any finishing works.

  Finally, illegal houses are spread along a significant portion of the seashore. These constructions are not anymore authorised to make additional works. The development of the village does not make exception to the overall rule. No attempt what so ever was made to establish overall management plans. Buildings are settled into weakly structured secondary road networks.
- *Continuous financial problems:* The municipality of Sarafand complains about not being able to collect municipal taxes. Another problem is that the municipal council is not capable of managing the community solid waste issue. The result is a large open dump which releases odours and other environmental problems.

- A third problem is the *lack of waste water treatment plants*. The municipality is incapable of avoiding pollution happening due to the lack of financial resources.

*Threatened economic development*

The main comparative advantages of the Sarafand locality have nowadays disappeared. Few people come these days to swim or enjoy a lunch. The construction of a huge sea resort complex to the south of the village corresponds to outdated concepts about tourism product and supply. It is to mention that most of the restaurants and tourism locations witness few crowd. The re-management of the whole shoreline is the only remedy to restore the previous tourism activity and compensate for the lost job opportunities.

Probably, the restaurants of Khayzarane will still attract for some time a local clientele; however, people would not come anymore from remote distances. The more controlled development of both Tyre and Saida cities has already captured most of the clients used to frequent Sarafand in old days.

One should finally mention that the circulation deviated by the establishment of the new highway and behind the village, the few available boutiques, shops and restaurants will increasingly witness a noticeable decrease in their turnover.

*The urgent actions*

*Regulatory actions:*

- *Agriculture and natural landscape:* It is advised to elaborate a land-use plan which ensures the protection of the agricultural plain of Sarafand situated to the east of the highway. The zones of the coastal area comprised between the current coastal road and the sea which and not yet affected by the urban encroachment are declared as agricultural areas.
- *Tourism:* The access to the beach shall be public and free of charge; it shall be also subject to strict regulations enacted by the municipal council aiming at securing the public comfort and security. Due to the proximity of the residential and touristic area, no constructions shall be envisaged on the beach. The archaeological resources should be valorised; their vicinities should be stated as *non-aedificandi* in conformity with the regulations in force.
- *Commercial activities:* The residential and touristic zone located between the beach and the coastal road shall include small size shops. The zones of high urban encroachment located to the east of the road should be delimited and classified as commercial and residential areas.

  On the other hand, the management plans currently under design shall preview the implementation of a commercial zone to be located close to the highway exit. This zone shall constitute a market for the locally produced productions: citrus, bananas, olives, fish, glass production, etc.
- *Industry:* The industrial activities shall be moved to a specified industrial zone. This type of activities shall be banned towards the seashore in order to preserve the tourism products of the town.
- *Residential zones:* The residential zones shall be concentrated as it was in the past over the plateau overviewing the agricultural zones.

*Economic instruments*

- *Economic instruments at the disposal of agriculture and natural landscapes*: The interest of the inhabitants for the agricultural activities shall be empowered. The agricultural plots being small, this fact does not enable the farmers to get enough cash-flows. To overcome this problem, co-operatives shall be created grouping the small owners. Other solutions consist in using KAFALAT. As for the protection of beaches, the decree on the public property and Code of the Environment are precious instruments.
- *Economic instruments at the disposal of tourism*: The transformation of the region constructed between the coastal road and the sea into an alternative touristic area could benefit from loans subsidised by the government in favour of SME working in tourism sector through KAFALAT. The protection of these areas could be through regulatory control and taxes (economic control) based on the law of Public property and the Code of the Environment.
- *Economic instruments at the disposal of the industry:* The industrialists and artisans of Sarafand could benefit from the wide range of economic instruments previously cited.
- *Economic instruments at the disposal of solid waste management*: The municipality of Sarafand, and contrary to Damour, has the possibility to manage its wastes. The introduction of the integrated solid waste management, including waste sorting from households, in addition to the establishment of areas designed for sorting, composting, and others, is important. It requires however the application of this law at the national level.

**The enhancement of public finance should enable to finance:**

- **The beach rehabilitation;**
- **The rehabilitation of the area surrounding the archaeological sites;**
- **The increase of municipal policemen;**
- **The achievement of secondary roads and waste water networks;**
- **The management of public spaces: gardens, pedestrian streets, etc.**

**Naqoura**

Located to the extreme south of the country, being the last village before the border, the village of Naqoura witnessed difficult moments since the end of the 60's. What the visitor discovers now is the following:

- UNIFIL military Camp located at the sea border and surrounded by small shops and coffee shops run by villagers from Naqoura and surrounding areas;
- a fishing port still in need for rehabilitation;
- a rocky coast deserted except from around the UNIFIL;
- some agricultural lands extending on both sides of the coastal road;
- abandoned hills located between the village and the cultivable band; and
- the core village.

Most of the job opportunities converge into fishing activities, in addition to the management of small coffee shops, restaurants located all along the UNIFIL Camp. The newly elected municipality was faced with an empty municipal fund. No assistance was provided by the government so far.

*The threats*

The IAURIF defined the threats that face over the Naqoura locality. Particularly, the Ras Al-Naqoura site was highlighted as an area to be strongly protected.

**Ras Al-Naqoura is a natural coastal site considered as the most preserved area of Lebanon, and characterised by remarkable landscape and ecology. Threats could result from urban and touristic development. Opportunity to implement the coastal highway further inland.**

To this point, one should mention that the government is currently studying the potential passage of the southern coastal highway linking Tyre to the Lebanese Southern border. This highway is intended to cross through the coastal plain of Naqoura and the Ras Al-Naqoura Cap in vicinity to the seashore. One should mention that this decision is a replication of what previously happened to the Al-Kalb River (to the north of Beirut), where the highway stopped any junction linking the coast to the inland.

*The urgent actions*

It is advised to elaborate a management plan that strictly devotes the use of the coastal plain for agricultural purposes with the possibility of implementing light alternative touristic infrastructure in well defined zones. The sea view from this location shall be preserved. In addition, the following actions shall be implemented:

- The free access to the beach;
- The coastal highway shall avoid crossing inside the agricultural lands and rocky caps, in order to preserve natural and cultural values of the village;
- The Cap region shall be protected and declared non-aedificandi;
- The residential areas shall be restricted to the core village;
- It is advised that the management of the area extending from the Cap to the border to be declared into nature reserve;
- The entrances of the village shall be managed;
- Industrial activities shall be confined to a quite restricted area;
- The shops shall be restricted to the zone where is currently located the UNIFIL Camp.

*Economic instruments*

It is urgent in the case of Naqoura to find the adequate instruments that should enable the municipality to operate. Moreover, the local population suffers from a high unemployment rate, especially after the modifications that occurred inside the UNIFIL groups. Indeed west European countries were replaced by army from developing countries (less purchasing power); moreover, only one person from Naqoura still works inside the UNIFIL Camp. For instance, these instruments shall before all enable the management of municipal wastes and sell recyclable items.

Also, the establishment of protected areas is an excellent mean to feed the municipality fund (entrance fees, transportation, parking fees, etc.). As is the case of Damour, the residential areas will benefit of higher values due to the preservation of the agricultural and natural landscapes. Accordingly, the increase in the rental value will be translated into a surplus in the municipal revenue.

In the case of areas located in zones classified as agricultural areas, the municipality shall undertake infrastructural works enabling the farmers to increase their income, to finance the construction of commercial halls, assist to promote local products, etc.

## Elements for an Integrated Strategy for Coastal Area Management

Two global socio-economic orientations were identified. The first global orientation calls for halting the rural exodus and immigration. While the second global orientation calls for the preservation of the natural and cultural heritage.

*First global orientation – Halt rural exodus and immigration through:*

- The creation of a rural economy rich in job opportunities. This could be achieved through:
  - developing the agricultural potential in a sustainable manner;
  - developing the forest potential in a sustainable manner;
  - developing the various agro-food industry in an environmentally-friendly manner;
  - increasing the value of the natural heritage;
  - increasing the value of the cultural heritage;
  - exploiting the fishery resources in adopting techniques and methods that would not affect the marine populations.
- Ensuring a high quality of life in rural areas. This is achieved through:
  - preserving the natural heritage;
  - preserving the landscape heritage;
  - preserving the cultural heritage;
  - developing cultural and recreational activities in rural areas;
  - maintaining low density of human settlements in core villages;
  - enhancing the solid waste management;
  - enhancing the waste water management.

*Second global orientation – Preserve recreational areas that are publicly accessed, through:*

- Preserving the cultural, natural and landscape heritage. This is achieved through:
  - increasing the value of the natural, landscape and cultural heritage in a way that would create job opportunities. This shall be created in favourable conditions that would ensure their proper preservation.

It is evident that increasing the value of the natural, landscape and cultural heritage cross undeniably through an appropriate treatment of solid waste and waste water. This treatment, that shall eventually enhance the quality of life in rural areas, serves also to the creation of necessary conditions to increase the value of this heritage, and consequently to create job opportunities. Indirectly, this step would assist in enhancing the quality of surface waters and consequently to the development of the fishery sector, which is another source of job creation. Finally, treatment of solid waste creates jobs by itself and secures revenues to the community through waste sorting and recycling activities.

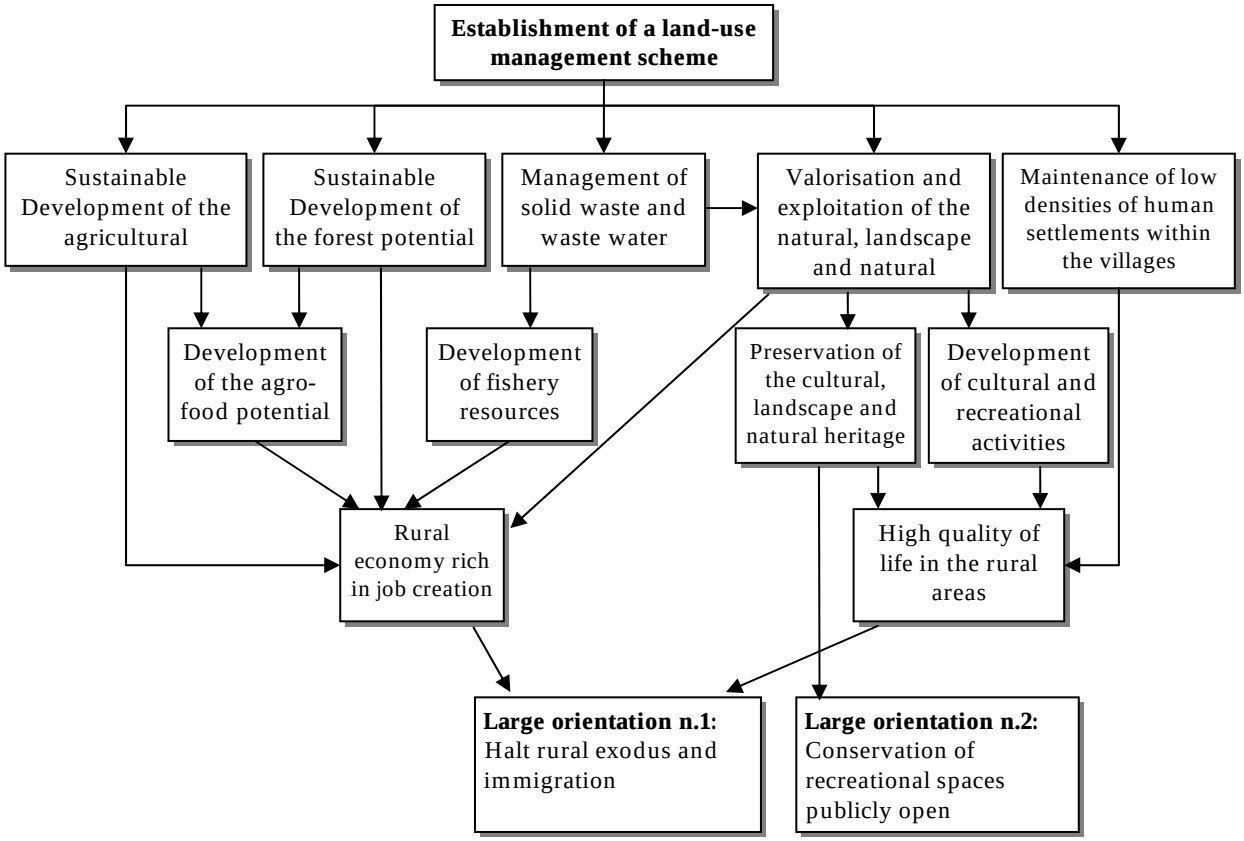



**Figure 2: Global interaction schemes – global orientations**

On the other hand, it is the process of increasing the value and exploiting the natural, landscape and cultural heritage that would lead to its preservation, and not the other way around. Indeed, if this heritage is not preserved, and if consequently it does not create revenues, it would be eventually sacrificed and the concerned areas would be dedicated to the other potential usage that would be a revenue source (residential complexes, industrial units, etc.).

The above-mentioned scheme highlights two major important actions to be activated at the beginning of the strategy implementation:

- The setting of a land-use plan that would allow the determination of the purpose of use of the various zones and to specify their uses.
- The management of solid waste and waste water is an action of primary importance because it is a pre-requisite to many of the strategic objectives. This step has the following impacts:
  - a direct impact on the quality of life in rural areas;
  - an impact on the fishery activities;
  - an impact on increasing the value of natural, landscape and cultural heritage.

Accordingly, a series of awareness activities and strategically political steps should be undertaken. They could be divided as follow:

- Awareness activities to political stakeholders as well as to citizens:
  - To present to the concerned political authorities, at both national and local levels, as well as to concerned citizens, the nature of the global actual demand to natural spaces including landscape, leisure areas, recreational areas, etc. and the tourism management. To explain the success of certain countries in attracting tourists, such as Greece, Spain,

Cyprus and Turkey; to demonstrate how rural areas are managed in these countries, and how villages, natural and cultural heritage are preserved for this purpose;
    - To present to the authorities and citizens the positive revenues resulting from master plans on local communities. To recognise that there are always some parts that could be encroached by the master plans but compensation mechanisms could be instituted;
    - To expose the institutional mechanisms in charge of equally distributing the income resulting from implementing sustainable development between national and local levels.
- Training activities:
    - To undertake a thorough training programme to local NGOs that shall be entrusted to disseminate information to the entire respective community;
    - To increase awareness on the necessity to establish indicators exposing clearly the beneficial effects of the sustainable development (number of visitors, water quality, incomings resulting from car parking plots managed by the municipality, number of jobs created, etc.) as well as the negative impacts of the anarchic development.
- Lobbying activities:
    - To obtain a clear commitment of the political authorities in favour of increasing the value of the agricultural and agro-food potentials of the country recognised as one of the main comparative advantages;
    - To obtain a clear commitment of the authorities in favour of the local development and combating against the rural exodus and immigration;
    - To obtain from the political authorities a clear speech on their duties towards transmitting and increasing the value of the natural and cultural heritage to the future generations;
    - To obtain a clear commitment of the authorities in favour of an increasing autonomy of the municipal management;
    - To obtain from the political authorities an allocation of the profits to the municipalities. For example, benefits generated due to the sale of recyclable products, etc.;
    - To obtain from the political authorities the establishment of a governmental structure in charge of:
        - Follow up of the strategy application;
        - Assisting the concerned bodies;
        - Adapting objectives to national and local constraints.

# Land-Use Management in CAMP Area

The following sub-thematic activity on land-use management provides a detailed overview of CAMP area. It is followed by detailed outline of the three selected municipalities: Damour, Sarafand and Naqoura. The overall study was used as the baseline data to carry out other CAMP thematic and sub-thematic activities.

## Damour

### Geographical Situation

Damour municipality is located between Beirut and Saida. It is characterised by the presence of a still preserved agricultural plain and a compacted urban core town. The southern highway separates the agricultural plain from the urban area. The municipality of Damour includes also the localities of Mechref and Saadiyat.

**Photo 12: Damour, panoramic view of the plain**

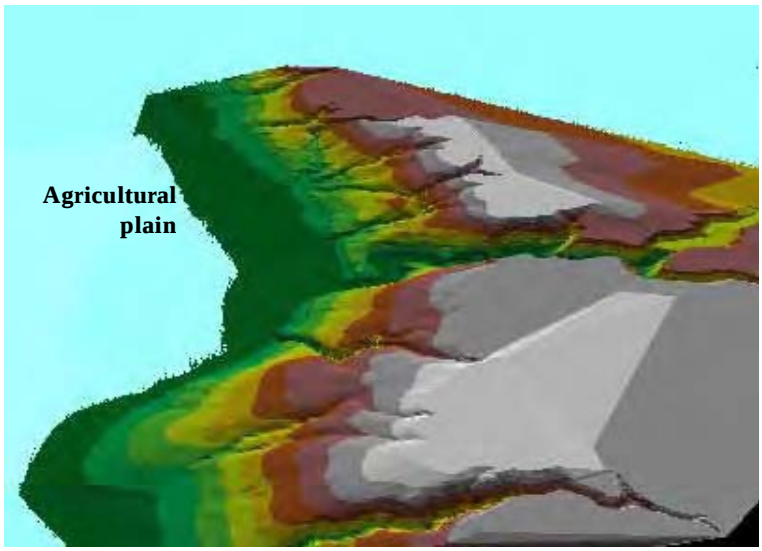



**Figure 3:**
**3D simulation of top of Damour**

## Altitude

The circumscription of Damour is characterised by a small surface area situated at sea level (7%). The largest section is located at altitudes varying between 5 to 50 meters. 21% of the municipal lands are located between 50 to 100 meters altitude. 13% of the surface area is located at an altitude above 150 meters.

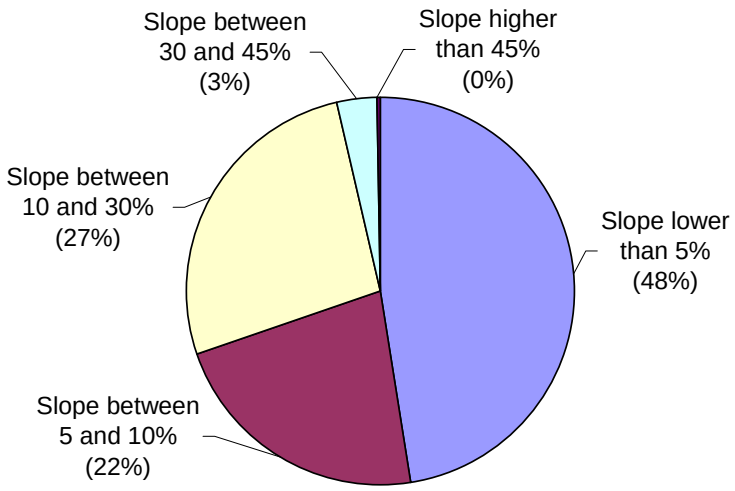



**Figure 4:**
**Distribution of surfaces according to slopes**

## Urban Zones

The expansion of urban zones was mainly made based on the level [50-100 meters] going from 11% up to 18.3%. The altitude zone exceeding 150 meters has witnessed a significant urban zone expansion, since they reach 12.8% of the surface are in 1998, while in 1994, the same area was almost empty. This zone corresponds to the higher part of the Mechref project which construction has taken place after the year 1994. Indeed, one of the Mechref settlements attracts particularly the population of high income which is of “gated community” type.

Consequently, there are two distinct types of urban developments:

- the reconstruction of the historical village, mainly carried out by people originating from Damour;
- the operation of private grouped human settlements located on Damour hills.

In 1994, the constructed zones were mainly located on the levels [5-50 meters] and [50-100 meters] with respectively 42% and 45% of the total urban areas. Four years later, we can observe an important modification of the village structure since the higher levels [100-150 meters] and more specifically [more than 150 meters] have hosted a significant part of the constructed areas.

The destructions caused by the war dramatically reduced the urban expansion of Damour. In fact, the urban zone of the actual village is similar, and even slightly reduced, compared to the village before 1975. Other urban zones were developed at the localities of Saadiyat and Mechref, this urban expansion being developed independently of the 1975 events. The analysis of the aerial photos dating back of 1975 and 1998 shows that the village count 800 buildings in 1975 while only 750 buildings were count in 1998.


**Photo 13, Photo 14: Examples of construction works**

### Cadastral Survey

The analysis of the land ownership types shows the important role that the public local authorities could play in terms of urban and economic development. Indeed, 3.3% of lands are public lands. The municipality owns 10.5% of the lands that are located in their majority in the backward of the village. The maronite waqf is the owner of 8% of lands mainly located in the agricultural lands. One of these lands is rented as the only sea resort of Damour.

People not originating from Damour own 29% of the lands. Damour inhabitants own almost 35% of the lands. The private development companies had acquired 9.39% of the lands circumscription.

Damour inhabitants own 54% of the agricultural lands, 30% of natural lands and 16% of constructed lands. Foreign ownership include mainly natural parcels (66%), agricultural lands (27%) and only 8% of the constructed lands.

### Housing Stock

The housing stock has almost disappeared during the war. Following the events of the year 1976, 62 buildings were destroyed.

**Table 3: Variation in the number of existing buildings**

| Year | <1950 | 1951- 60 | 1961-70 | 1971-75 | 1976-80 | 1981-85 | 1986-90 | 1991-93 | 1994-95 | 1996-97 | 1998-99 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Number | 500 | 120 | 132 | -620 | 2 | 9 | 8 | 15 | 289 | 207 | 90 |

*Source: Crossing between CAS (1996), aerial photos DAG (1963, 1975, 1994, 1998)*

One has to wait until the war is over to observe the reconstruction process. The impact was not only observed on the number of buildings but also on the type of construction (buildings replacing the traditional houses), the number of floors per construction, etc.

It is to note that there are still few elevated buildings (only 2 buildings having more than 7 floors). One third of the buildings are composed of one floor, another third of the buildings containing two floors, while the last third of constructions have between 3 and 6 floors.

**Photo 15:**
**Palace dating back to beginning of XX Century**

**Photo 16:**
**Survived traditional house**

**Table 4: Distribution of buildings according to date of construction**

| Date of construction | Number of buildings | % |
|---|---|---|
| Before 1950 | 20 | 1% |
| 1951-1960 | 66 | 4% |
| 1961-1970 | 30 | 2% |
| 1971-1975 | 16 | 1% |
| 1976-1980 | 2 | 0% |
| 1981-1985 | 9 | 1% |
| 1986-1990 | 8 | 0% |
| 1991-1993 | 15 | 1% |
| 1994 et + | 464 | 29% |
| Undetermined | 32 | 2% |

*Source: Central Administration of Statistics, Inventory of buildings, 1996*

**Table 5: Distribution of number of housing according to the type of occupation**

| | Type of occupation | | | | |
|---|---|---|---|---|---|
| | Main | Secondary | Empty | Other | **Total housing** |
| **Number of housing** | 221 | 1 | 85 | 0 | **307** |
| **%** | 72% | 0% | 28% | 0% | **100%** |

*Source: Central Administration of Statistics, Inventory of buildings, 1996*

It is also worth noting that the number of buildings and floors, and contrary to cases of more classical urban development, does not reflect the number of inhabitants.

### Transformation of the Built Heritage of Damour Village

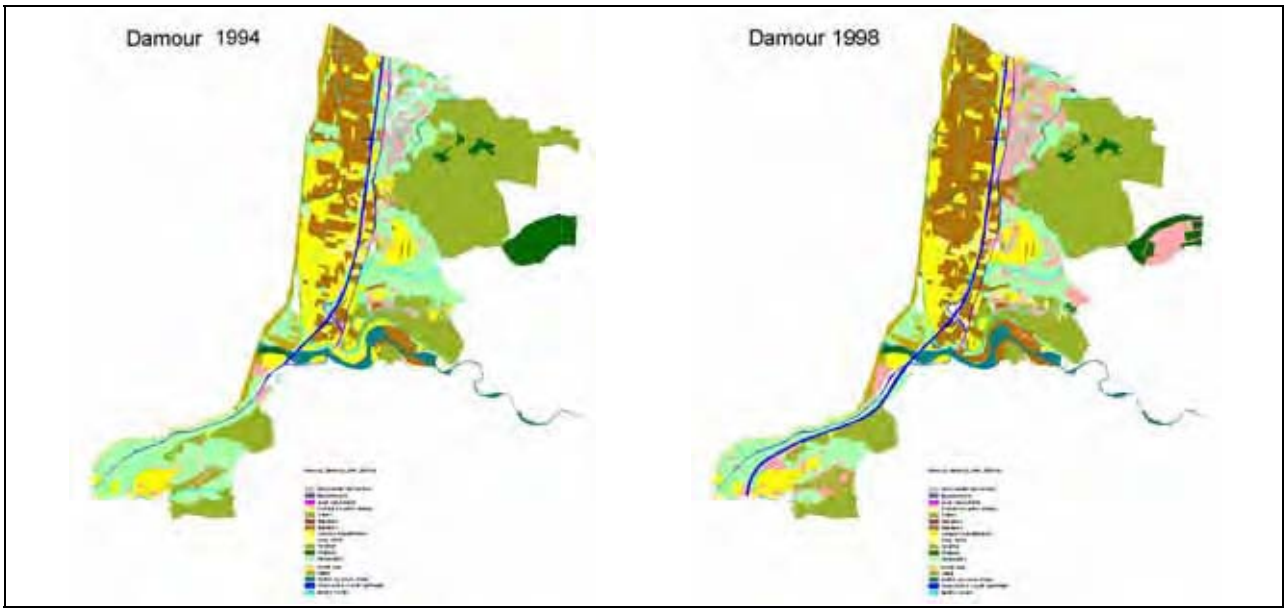
It is of high significance to analyse changes that have occurred to the traditional village of Damour, which was totally or almost destructed in 1976, compared to the reconstruction phase that took place in 1994. It is also important to highlight that the Damour village used to encompass a number of buildings of prominent heritage value which used to be a topic for a number of researchers, architects and orientalists. In addition to the intrinsic value of buildings, it is the urban composition of Damour which has made of it a model similar to villages well known for their landscape value such as Deir Al-Kamar, Douma or Hasroun. This thorough analysis does not mean that Damour reproduction should look similarly to the village as it used to be prior to 1975, but it is rather meant to gather key components and features in order to get inspired for the typologies of the future village extensions and for the traditional village itself.

It is at the level of the historical heritage that one should resort to efforts (competition of ideas, inter-university competition, summer workshops) to trace a minimum of urban coherence and identity of the Damour of yesteryear. The operation is certainly delicate since it requires avoiding a blind reproduction but necessary to recognise the gist of Damour.

### Land Use

Between 1994 and 1998, the artificial (urbanised) areas have increased to cover 16% of the total Damour surface area. Agricultural surface areas have also augmented to 26%; the agricultural plain being deserted during the war. These increases took place at the detriment of natural zones which surface area has decreased of 10% but they still occupy nowadays 55% of the village surface area. Forests and herbaceous zones were mostly affected by these changes.

Between 1994 and 1998, urban areas increased of 108% (equivalent to the double of the constructed areas), which explains the reconstruction efforts undertaken by the Damour inhabitants.




**Map 1: Land use 1994 and 1998**

## Natural Areas

As it was previously mentioned, the presence of natural areas is strongly detected: one third of the land circumscription is covered by woodlands. Coniferous mostly found on the Mechref hills are being gradually replaced by broad-leaved trees (such as oaks) in Saadiyat area, while the Damour River constitutes a natural barrier separating between the two species. Nevertheless, around 15% of Damour surface area is covered with herbaceous areas.

On the other hand, if we compare cadastral maps of years 1940 with aerial photos for 1994 and 1998 available at the Directorate General of Antiquities, we observe an important narrowing of the coast (25 meters) equivalent to the disappearance of 0.1 km² of beaches, a fact that confirms fears expressed by both inhabitants and municipality. According to the municipality, this was probably due to unlawful and massive sand dredging during the years of civil war.

**Photo 17:**
**Beach erosion and subsidence**

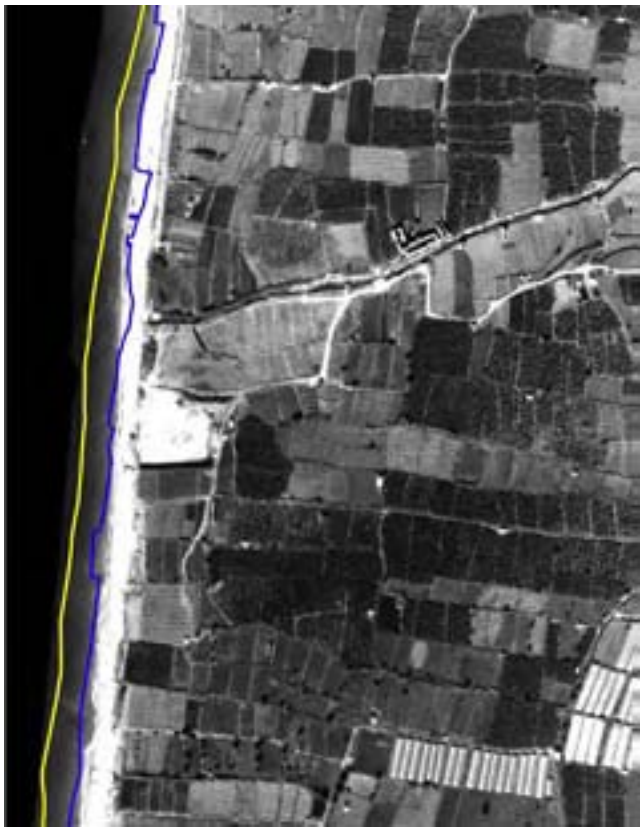


**Photo 18:**
**Surface area of beaches that disappeared all along the coast**

(Blue line: coastal line corresponding to 1998. Yellow line: coastal line corresponding to cadastral map of years 1940)

## Agriculture

Agriculture constitutes a major activity of the region. It is a sector which has equally suffered from the war consequences since a part of its lands were abandoned during this era. Between 1994 and 1998, we observe an increase in exploited lands. Apart from the coastal plain, Damour valley is another important agricultural site. The forest surface area is very significant as it corresponds to 33.3% of the land circumscription in 1998. The herbaceous zones are equally very present (14.5%).

The main agricultural products are bananas (16.7% of total surface area) which have increased of 38% between 1994 and 1998. Banana plantations are found in the agricultural plain and Damour River Valley. In this respect, farmers have developed an agricultural know-how which was exported to other coastal plains.

Vegetable gardening represents 10.7%; however, we observe a decrease of 19% in cultivated surface areas. These lands are mainly located to the east of the highway. Few greenhouses are still reported. Two irrigation networks have facilitated the productions of cultivations enormously demanding for water. Farmers market their products via exhibition stands constructed all along the highway.

The changes in agricultural lands are relatively constant. Indeed, in 1963, 2% of lands were subject to alteration while only 1.4% was observed in 1998. This weak percentage is explained by the fact that since 1994, the reconstruction phase has focused on the traditional core village. The forest has undergone less important transformation, passing from 0% in 1963 to 0.8% in 1998. Nevertheless, this percentage does not comprise urban extensions of Mechref and Saadiyat areas which are considered more important than land conversion. One should mention that the risks of land conversion and the loss of the agricultural identity that characterises the Damour plain have encouraged local stakeholders to propose measures aiming at protecting agriculture by reducing land use coefficients from 30% to 5%.

**Economic Activities**

In 1996, only 44 buildings had an economic allocation among which 35 buildings for commercial purposes. The service sector count 6 buildings: five buildings are allocated to the industrial activity. Similarly to the nationally implemented statistics, 10% of the units have more than 5 employees. These data dating back to 1996 cannot take into account the activities that are increasingly developing since the return of inhabitants.

**Table 6: Number of buildings allocated to economical activity**

| | Agriculture | Industry | Commerce | Services | Others | Total |
|---|---|---|---|---|---|---|
| **Less than 5 workers** | | | 31 | 6 | 3 | **40** |
| **More than 5 workers** | | 5 | 4 | | 1 | **4** |
| **Total** | **0** | **5** | **35** | **6** | **4** | **44** |

*Source: Central Administration of Statistics, Buildings survey, 1996*

*Industry*

Silk industry used to constitute a very important activity in the region which has largely developed during the last decade without including any activity that refers nowadays to this old industry. Small industrial workshops are found, notably those connected to iron works, cement blocks cutting as well as a number of vehicles repair and maintenance shops.

A technological park project, located to the north of Damour, is currently under study. This project, headed by the municipality of Damour, is an innovation at the national level, since it is a pioneer initiative associating a given local community to private investors.

**Photo 19:**
**Site expected to host BETZ Project (technological park)**

*Commercial activities*

Various proximity commercial shops are found in the village. Some of these activities, mainly in selling seasonal agricultural products, are established all along the highway. The regulation limits basically the increasing establishment of activities in this location.

*Services*

In terms of touristic equipment, two restaurants and two coffee shops are operational close to Damour River, while two tourism resorts are located on the local maronite waqf. As for the educational services, three schools and one private technical university (MECAT University) are established in Damour. In addition, two cultural centres are located inside the traditional village as well as a sport municipal centre. A clinic answers the medical needs of the locality.


**Photo 20: Private University**

**Photo 21: Cold store**

## Population

The Damour village was severely affected by the civil war. The almost entire destruction of the village in 1975 has provoked the displacement of the population. This had led to a total abandon of the village. During the reconstruction phase, Damour was subject to a specific programme concerned with the return of displaced.

In 1996, the Administration for Central Statistics (ACS) surveyed 662 buildings. Permanent inhabitants were estimated to reach thousand persons. Moreover, ACS considered that people aged less than 20 years constitute 32.3% of the inhabitants which corresponds to a total of 350 persons.

In 1998-1999, and based on aerial photos, 752 buildings were counted, which is equivalent to an increase of 13.5% in two years of time. Since this survey, the displaced programme assistance facilitated the return of around 1,000 to 2,000 persons.

## Transportation Network

*Traffic*

A highway separates the agricultural plain situated to the west from the rest of the land circumscription. The highway links Beirut to the cities of the South (such as Saida, Nabatyieh and Tyre). It is considered the entrance gate to the Chouf region as well. A secondary road serves Saadiyat village. In the absence of any deviation, the Baouarta public road crosses the village which creates circulation problems due to heavy passage of trucks. An internal road serves the Mechref village.

Roads occupy 31.2% of the urbanised surface areas and 4.98% of the total land circumscription area, whereas this percentage is of 2% all overall Lebanon. Accordingly, we can observe that roads occupy in Damour a surface area high above the average. This phenomenon is due mainly to the highway passage (three times two roads) which crosses the circumscription from south to north, but also it is the result of roads created by Mechref and Saadiyat settlements.

A study for road traffic was carried out in 2000. On the highway, it was reported that the daily annual average day witnesses 51,000 vehicles per day. The access road to Chouf is borrowed by

an average of 7,442 vehicles per day. In addition, an average of 2746 users crosses the road leading to Baouarta. The internal road of Mechref is used by 2,000 vehicles per day.

*Parking*

According to ACS, 507 buildings owned one parking, which is equivalent to 76% of surveyed buildings. In the absence of recent data, it is not possible to know whether in parallel with the reconstruction boom, there was a balanced provision of parking plots.

**Wastewater Networks**

Facing the poor state of old wastewater network which did not survived to the events of 1976, the municipality, and for lack of money, encouraged the inhabitants to dig sceptic tanks. It is expected that wastewater will be directed towards Ghadir wastewater treatment plant. 285 buildings (there were 662 buildings surveyed in 1996) are connected to this network; a number that is contested by the municipality which states that the wastewater network is not operational since the end of the war.

Solid waste generation reaches 3 to 4 tons per day. The Sukleen firm is charged of collecting and treating solid waste, including medical waste.

**Impact of Urban Regulation**

A master plan was elaborated in 1968; it subdivides the municipal territory into 6 zones: two mixed zones (commercial and residential) at different densities, a residential zone, an agricultural zone, an industrial zone, and a touristic zone. The zone corresponding to the core village has the highest land exploitation rates. The tendency was, and still is, to promote higher concentrations inside core villages which threatened the historical heritage of the localities. The agricultural plain is weakly protected since its zoning could be modified.

Some clauses of the urban regulation allow the establishment of specific handcraft activities (repair workshops) even inside the residential districts. A large part kept to touristic activities is used to the purpose of villas construction.

In 1994, a decree cancelled the roads projected inside the plain, with the objective of avoiding all risks of urban development. In 1998, the DGUP approved a new master plan; however, this plan was rejected by the municipality which proposed in return another alternative that was postponed by DGUP. This plan has anticipated a decrease in land exploitation rates as well as a decrease in the touristic perimeter for the benefit of establishing a green belt aiming to protect the agricultural plain against harmful activities, the aqueduct, old canals, in addition to the reorganisation of urban development towards the hills.

**Conclusion**

The analysis of the different indicators shows:

- The reconstruction boom: As a result to the almost entire destruction of the village in 1975 and the displacement of the population, an assistance programme to help the return of displaced inhabitants was put in place in 1994. This has encouraged the destruction of almost 290 buildings between 1994 and 1995 as well as more than 200 buildings during the subsequent two years. Consequently, the permanent return of the population was less than the observed reconstruction process; it became lesser with the gradual decrease in the reconstruction rhythm and funds since 1998.
- The destruction followed by a partial reconstruction had led to a major change in the village configuration. Indeed, we observe a strong modification in the types of existing

constructions (buildings instead of individual houses), their heights (a number of buildings exceeds four floors). The architectural identity of Damour was strongly modified within thirty years of time.

- The highway presence between the agricultural plain and the traditional core provokes a break which complicates inhabitant's access to the other side of the municipal territory.
- The touristic potential is not exploited despite the presence of architectural, historical and cultural heritage as well as beaches, features considered significant to the development of this sector.
- The risk of monoculture with the spectacular development of banana plantations at the expense of other coastal cultivations.

**Recommendations**

- The adoption of a master plan and the protection of the agricultural plain;
- The organisation of the road network;
- The beach management;
- The adoption of protection measures and valorisation of both urban and architectural heritage of Damour.

## Sarafand

The municipality of Sarafand is bordered to the west by the seaside (altitude zero) and covers the piedmont until 200 meters altitude to the east. The original core village is located inland on a hillock. The circumscription comprises two plains, a coastal plain located on an altitude of less than 50 meters and another plain situated between 100 and 200 meters altitude.

**Photo 22: Sarafand, view of the original village nucleus**

### Morphological Situation

### Altitude

The surface area corresponding to the altitude [0–5 meters] represents 6% of the total surface area of the land circumscription. The largest part of the circumscription (42%) is located to an altitude between 5 and 50 meters. 11% of the surface is comprised between 50 and 100 meters which corresponds to the traditional core of the village; 34% of the surface being located between 100 and 150 meters. The higher altitude [more than 150 meters] encompasses 7% of the surface area.

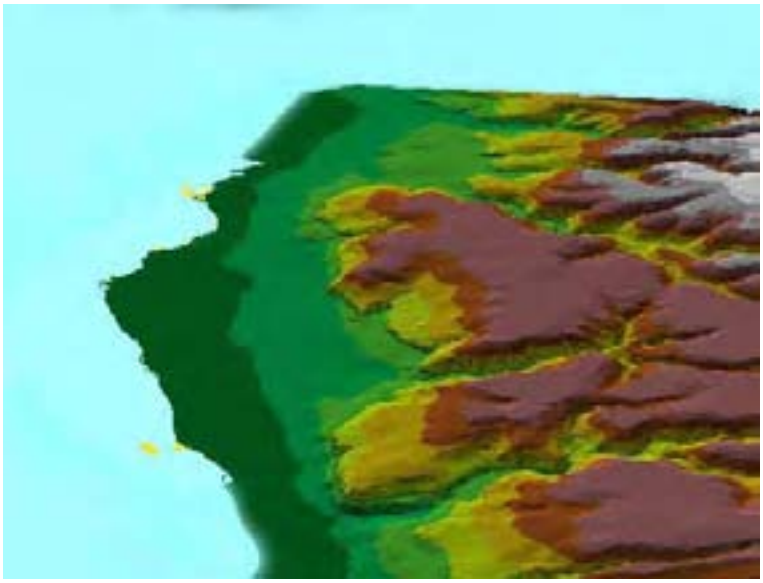


**Figure 5:**
**3D simulation of Sarafand relief**

## Relief

The slope is less than 5% for 61% of the land circumscription surface area. It is comprised between 5% and 10% for 15% of the land surface. 21% of the surface area has a slope between 10% and 30%. Finally, 3% of lands are endowed with a slope exceeding 30%.

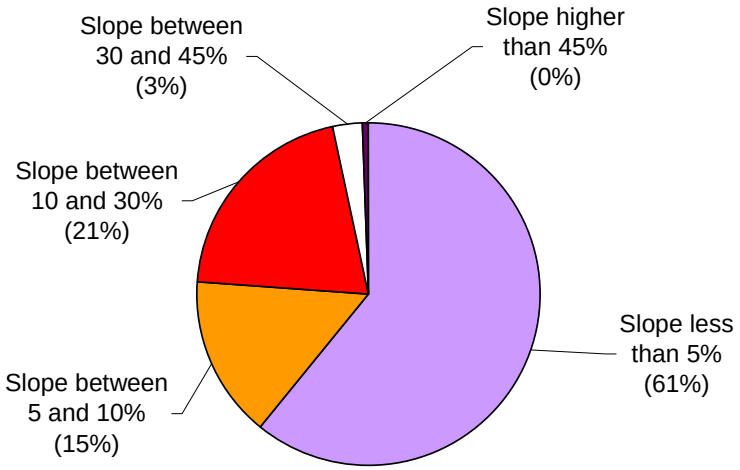



**Figure 6:**
**Distribution of surfaces according to slopes**

## Urban Infrastructure

Between 1975 and 2002, one can observe a significant transformation in the land-use structure of Sarafand land circumscription which corresponds to 9.5 km² surface area. The part of urban areas has increased from 21% to 52% on the coast [0-5 meters], which corresponds to a multiplication by 2.5 of constructed surface areas. This represents the urban development along the coastal line as well as the encroachment on the public maritime domain.

**Photo 23: Sarafand, urban development all along the coastal road**

The constructed surface area on the altitude [5-50 meters] has multiplied by 3.2, thus increasing from 3.5% to 11.5%. The urban areas of altitude [50-100 meters] occupy 26% of the corresponding surface areas, while in 1975 this same percentage did not exceed 11% of the surface area which corresponds to the multiplication by 2.4 of constructed areas. The altitude [100-150 meters] is characterised by the highest increase of urban areas (+ 480%); in 2002, the urban zones occupying 25.5% of total surface area against only 4.5% in 1975. This corresponds to the urbanisation of the higher plain. At a higher altitude [more than 150 meters], the part corresponding to constructed areas is still low (8.3%).

The distribution of urban zones was subject to modifications between 1975 and 2002, but this was not equally spread among altitudes. In 1975, the urban zones were distributed almost equally within the first four altitudes comprised until 150 meters; they were almost non existent on higher altitudes (more than 150 meters). The expansion of urban zones has modified this distribution: the part corresponding to urban areas located between 100 and 150 meters altitude has increased from 27 to 43%, corresponding to a multiplication of 5.8 of urban zones within this altitude. The urban areas were equally developed on a higher altitude but limitedly (3% of the urban areas).

### Urban Areas and Relief

One can observe a similitude between the distribution of urbanised areas and the land configuration. Accordingly, 53% of urbanised areas are located in zones endowed with a slope lower than 5%. 20% of constructed plots are located in lands characterised by slopes comprised between 5% and 10%. The surface areas constructed on slopes exceeding 30% are insignificant (2.4%).

Two reasons could be attributed to this distribution:

- The first, of technical rank, is associated to the construction difficulties faced in lands characterised by strong slopes. Large scale works have high cost and are complicated, a fact that is not feasible to Sarafand inhabitants who build their houses by themselves.
- The second is due to the fact that zones endowed with 30% slopes are generally located away from the road network.

Zones having strong slopes correspond to the herbaceous zones of Sarafand. The absence of urban pressure exerted on these zones during the last decades allows envisaging measures of protection or reforestation. Belvederes ensuring panoramic views of the coastal plain and seaside on one hand as well as the inland and the mountains deserve to be valorised.

**Photo 24:**
**Transformation occurring on the higher plain**

**Detailed Survey of Plots**

The allocation of plots varies according to their status, public or private as well as the ownership origins, whether from inside or outside Sarafand. At the level of land divisions, one could observe that 7.4% of lands are public or governmental. This significant part of public and municipal domains allows certain flexibility in terms of real estate control, and urban management (creation of planned activity areas, urban operations in terms of lodgements, identification of waste treatment sites, etc.). 2.5% belong to the municipality or to the commune. 1.6% of land ownership is attributed to waqfs, familial or religious. 30.1% of lands are the property of Sarafand nationals; 49.5% are lands owned by individuals and families non-originating from Sarafand. The part of lands belonging to strangers, being higher than those owned by locals, is an indicator revealing to different logics behind land-use control.

Public lands are used for implementing roads, some educational equipment, and the waste discharge. Lands are equally rented to private, as agricultural lands or for implementing touristic activities on the seashore. A non negligible part is still not attributed to a specific activity. Moreover, illegal encroachments were produced on public maritime domains: actually, there are 77 constructed buildings.

In terms of construction, and consequently of urbanisation, Sarafand locals were the main actors behind urban development. Owners non-originating from Sarafand have maintained and still a traditional agricultural system constituted of private income and exploitation contracts. In fact, lands owned by Sarafand locals constitute of 30% of constructed lands (human settlements), agricultural parcels (58%) and natural plots (12%). On the other hand, lands owned by owners constitute mainly of agricultural lands (80%), natural zones (11%) and constructed plots (9%). Accordingly, land ownership impacts the choices of cultivations as well as raising owners awareness towards environmental and landscape problems or in general terms on their implication regarding sustainable socio-economic development of their village.

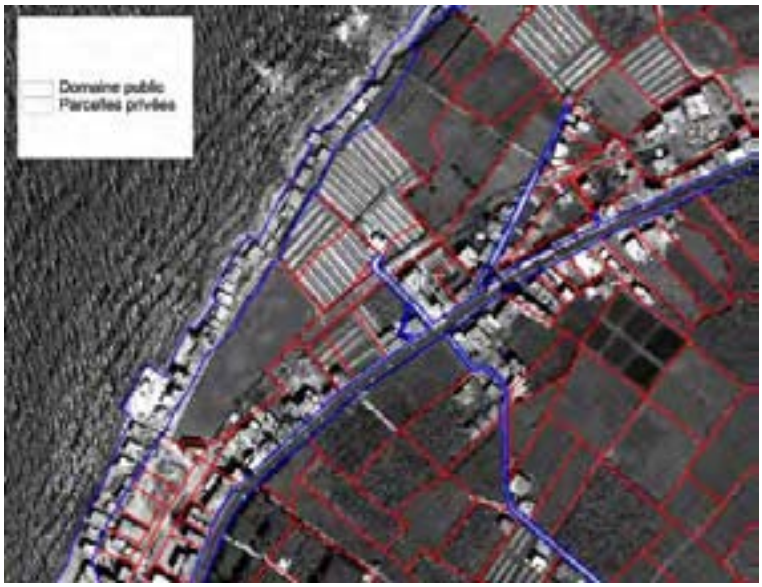



**Photo 25:**
**Land divisions**

Land circumscription of Sarafand witnessed increasing urban encroachment on the public maritime domain. Reasons behind this encroachment reside in the arrival of displaced populations coming from southern villages. This settlement was facilitated by the decrease of the government authority and the paralysis of the municipal role during several decades. This fact has led to an increase in illicit constructions.

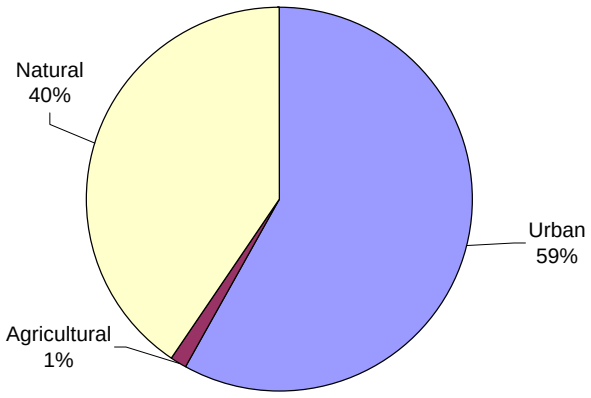



**Figure 7:**
**Encroached land-use type on public maritime domain**

Urbanised areas represent 59% of encroached surface area on public domains. Agriculture is marginal (1%) while the remaining 40% remain intact for the moment.

The urban areas are composed of human settlements (77 buildings) as well as other touristic equipment and resorts (2 resorts). In other words, surface area occupied by the two tourism resorts is equivalent to the area in use by more than 160 families.

7% of buildings were constructed prior to 1950. 39% of current buildings were constructed during the war (1975-1990) while 12% of buildings are post-1991. Consequently, one can observe a slow down in the construction process at the end of the war, which is the opposite process witnessed in other localities such as Damour.

In 1996, 82% of housings were used as main residences. 14% of lodgements were empty. The space consumption per inhabitant is estimated to be 159 m² per inhabitant if only artificial spaces are taken into account.

**Table 7: Buildings distribution according to construction date**

| Date of construction | Number of constructed buildings | % |
|---|---|---|
| 1950 and – | 114 | 7% |
| 1951-1960 | 187 | 12% |
| 1961-1970 | 217 | 14% |
| 1971-1975 | 187 | 12% |
| 1976-1980 | 217 | 14% |
| 1981-1985 | 203 | 13% |
| 1986-1990 | 193 | 12% |
| 1991-1993 | 103 | 6% |
| 1994 and + | 91 | 6% |
| Undetermined | 90 | 6% |

*Source: Central Administration of Statistics, Buildings surveys, 1996*

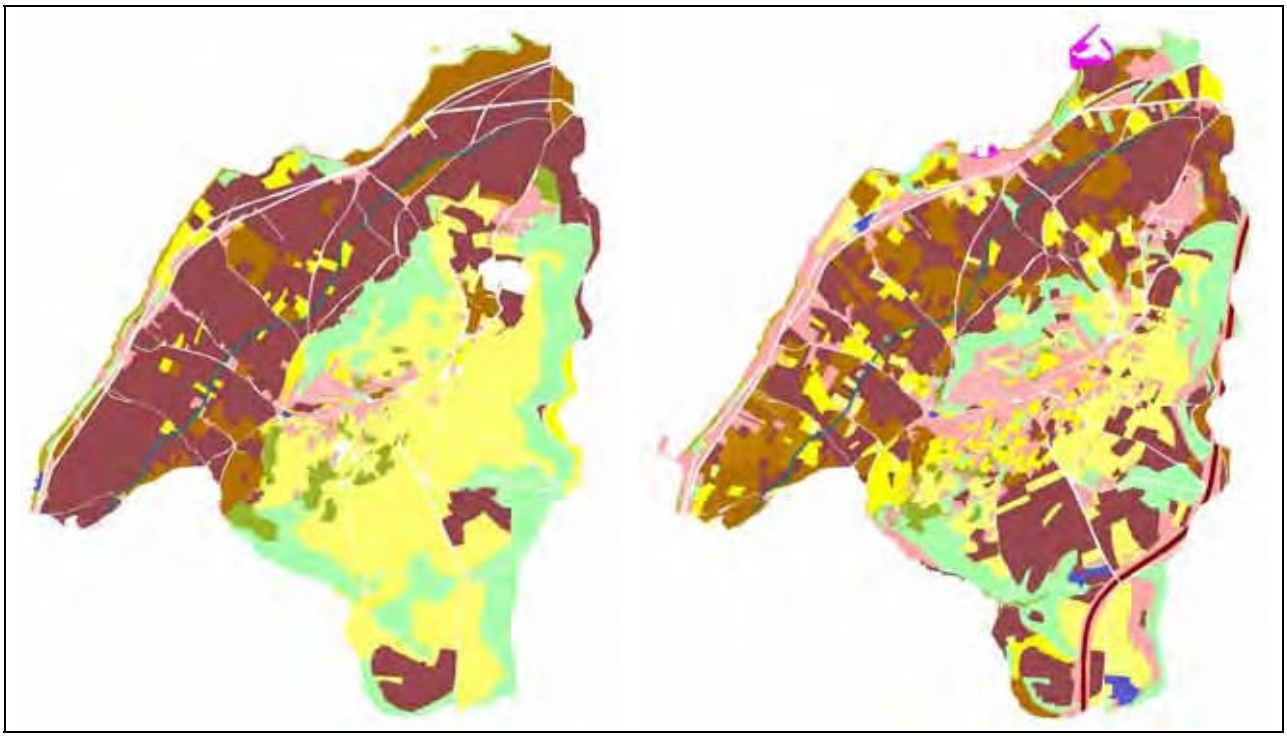
**Table 8: Distribution of housing number according to the type of use**

| | Use type | | | | |
|---|---|---|---|---|---|
| | **Main** | **Secondary** | **Empty** | **Other** | **Total housing** |
| **Number of housing** | 2,193 | 39 | 371 | 57 | **2,660** |
| **%** | 82% | 1% | 14% | 2% | **100%** |

*Source: Central Administration of Statistics, Buildings surveys, 1996*

## Land-use Change Between 1975 and 2002

Based on the above-mentioned findings, urbanised areas were multiplied by 3.6 in 27 years of time. It currently occupies 21% of surface area while it was only 6% in 1975. This expansion was made at the expense of agricultural zones (-15%) and natural zones (-19%) previously occupying respectively 64% and 15% of surface area in 2002.



**Map 2: Land-use in 1975 and in 2002**

**Natural Areas**

Sarafand owns beaches extending over 45,000 m² of surface area, a large part of it is sandy. The coastal line measures approximately 5 km. These beaches have important touristic potential and historical vestiges. Beach access for Sarafand inhabitants is another important data reflecting village quality of life as well as the awareness raising targeting inhabitants on environmental stakes.

Herbaceous areas are present in strongly inclined areas. These spaces are considered as buffer zone among urbanised areas.

**Agriculture**

The present facet aims at analysing the impact of urban development on the agricultural space, agriculture being an important economic sector all over the CAMP study area, at the levels of number of population employed in this sector, generated income, the agricultural production as well as the constituted landscapes.

In 1975, citrus used to represent 40.4% of total area, open field cultivations 27.8%, herbaceous areas 15.5%, bananas 6.2% and urban zones 5.4%. Sarafand village used to be a village strongly impregnated by agriculture whereby the dominating cultivation was citrus trees namely orange and lemon trees.

In 2002, citrus represented 29% of total surface area, which is equivalent to a reduction of 32% of surface area planted with citrus. Urban areas increased of 269% and currently occupy 21.1% of surface area. Open field cultivations decreased of 42% to occupy 17.1%. The area dedicated to banana trees increased to 125% to reach nowadays 14.9%. Herbaceous areas decreased of 21% to occupy 13.1% of the total circumscription surface area.

Two agricultural plains are present within the land circumscription: the coastal plain as well as the upper plain located above the traditional village. In 1975, the coastal plain was exclusively planted with citrus (mainly orange and lemon trees).

In 2002, one can observe a diversification in land-use. If citrus trees still represent 44% of the initial area, banana trees occupy now 23% of the surface while urban zones absorb 17%. Greenhouses are actually limited in number: if profitability resulting from vegetable cultivation is relatively high, necessary initial investments are resulting; depreciation is being made over several seasons and renting contracts, most of the time held informal and / or over short duration of time, a matter which does not favour such type of activities.

The presence of the Litani Canal is an explanatory factor for the important presence of bananas, highly water consuming plantations, and more generally for conserving an intensive agricultural activity within this zone. In 1975, the upper plain was entirely used by open field cultivations. Presently, these cultivations do not constitute more than 17% of the plain surface area. Citrus occupy respectively 26%, urban areas 20% and herbaceous areas 14%.

Combining the surface areas of both plains, one can observe an increase in urban surface areas (+ 18.5% of the cumulated surface area). The decrease of citrus trees in coastal plain is partially compensated by the appearance of such cultivation in the upper plain (- 15%).

In 2003, transformation of agricultural lands has increased to 10.7% of total agricultural surface area. This may lead to a potential shift of this additional part entirely into urban in the coming years. This phenomenon is therefore important since it was non existent in 1963.

Fishing is a very important traditional activity: the harbour can host some hundred boats and approximately 150 fishermen.

## Economic Activities

*Industry*

Industrial activities are composed of 5 establishments (plastic bags and glass production), 2 workshops for marble cutting as well as several activities linked to cars (electricity, car repair or maintenance, etc.). In 1996, 86 buildings were used in this sector.

*Commercial activities*

Commercial shops (bakeries, furniture, others) were located all along the coastal area and inside the village. Around 400 shops were available in 1996.

*Services*

At the tourism level, one can tot up 3 hotels, 15 restaurants and 5 coffee shops, all of them located on the coast. At the educational level, 9 schools are present in Sarafand. On the other hand, 2 hospitals and 3 clinics are operational.

**Table 9: Number of establishments based on economic use**

| | Agriculture | Industry | Commerce | Services | Others | Total |
|---|---|---|---|---|---|---|
| **Less than 5 workers** | 128 | 69 | 377 | 72 | 130 | **776** |
| **More than 5 workers** | 16 | 17 | 20 | 9 | 19 | **81** |
| **Total** | **144** | **86** | **397** | **81** | **149** | **857** |

*Source: Central Administration for Statistics, Building survey, 1996*

## Population

According to estimations established based on the buildings survey carried out by the Central Administration for Statistics in 1996, resident inhabitants count approximately 12,500 persons. The survey indicated that 45.4% of total inhabitants of the Mohafazat (governorate) of the South are aged less than 20 years, while this youth category represents 38.9% of the population. At the level of Sarafand municipality, 5,500 persons are aged less than 20 years. This indicator translates the important needs required in terms of scholar equipment, as well as public and leisure areas. In terms of population density, one can observe an inequality in population distribution which could be translated into:

- A concentration within the main core area with a risk of over-concentration;
- A scattered distribution in the village extensions with a risk of increased utilisation of space per inhabitant.

Consequently, it is necessary to ensure the minimum of green and leisure spaces in the central area by reducing concentration levels in order to enhance quality of life and reinforce its attractiveness. Oppositely, the establishment of public spaces in extension areas would lead to restructure these scattered and dislocated zones.

## Transportation Networks

*Traffic*

The coastal area (national road) separates the coastal band from the rest of the village circumscription. It links the cities of Saida and Tyre. Secondary roads link Sarafand village to the villages of Saksakyeh, Daoudyeh and Nabatyeh. Since 1998, the Southern highway bypasses the eastern part of land circumscription, thus separating one section from the remaining part of the village.

According to their status (national or local), roads do not fall under the jurisdiction of one sole governmental entity. Consequently, national roads depend from the Ministry of Public Transport while local and agricultural roads are directly affiliated to the municipalities' authority.

In 2000, the study carried out on road traffic showed that the coastal area witnessed an annual daily average of 15,900 cars per day. The traffic Sarafand-Nabatyeh via Msayleh is estimated to 6,649 vehicles per day. Finally, 3,008 vehicles cross daily the road linking Sarafand to Bablyeh.

*Parking*

According to ACS survey in 1996, 360 buildings are equipped with a car parking, which is equivalent to 22% of surveyed buildings. Subsequently, inhabitants park their cars along the roadsides, thus reducing the spaces allocated to roadway as well as impacting the traffic smoothness by increasing its congestion.

**Wastewater Network**

In 1996, and always according to CAS survey, 11.8% of buildings used to be connected to the wastewater networks. Since then, major efforts were deployed to install necessary main and secondary connections. Accordingly, around 50% of buildings are considered connected to the wastewater network. Nevertheless, hospitals, tourism complexes and some scholar establishments are not connected yet. Wastewaters are discharged into the sea at two locations. However, buildings situated on the coast discharge directly their respective wastewater into the sea. A project of wastewater collection and treatment is currently under study. Solid waste, estimated at 10 tons per day, are collected by the municipality and consequently stocked in an open dump located on a municipal land.

**Impact of Urban Regulations**

The master plan entitled "southern beaches of Lebanon" (decree 5450/73) extending all over CAMP coastal area, crosses Sarafand municipality at the level of its coastal plain, thus leaving the remaining part of the territory non-regulated. Subdivisions into touristic, residential and mixed (residential and commercial) zones were not respected. More critical is the state of areas sited outside the extent of the master plan, or in other words, the areas including the core village and the upper plain which have both witnessed further significant urban development in the absence of any regulation except the law 17/83.

**Conclusions**

The analysis of the different indicators shows:

- A very fast increase in urban areas: effectively, in 28 years of time, urban areas were multiplied by three. This had had as consequences a decrease in agricultural surface areas and an increase in land conversion.
- Despite some advantages (beaches, historic ruins, harbours, tourism complexes), tourism activities were scarcely developed.
- Despite obvious efforts realised between 1996 and 2002, the proportion of buildings linked to the wastewater network is still insufficient (5%) since hospitals and some economic activities are not attached yet. The establishment of a wastewater treatment plant would undeniably have a quite positive environmental impact. Nevertheless, the choice of the plant location should be carefully studied.
- Urban management tools (urban development control, creation of adequate public areas) cannot be efficiently utilised.

- The core village is over condensed while extended zones witnessed high urban encroachment at the expense of natural and agricultural areas.
- The under concentration of extended areas would lead to an overcharge in terms of infrastructure, a matter which the locality cannot handle.

**Recommendations**

- *Increase in urban areas:* Urban areas will witness an increase in the coming years, mainly as a result to the natural population increase (+2%/ year according to SDATL previsions). Constructible areas are limited by the land configuration. The upper plain is already swallowed up by scattered urbanisation. In order to reduce such dispersal, an increase in land use ratio on the first urban ribbon surrounding the original core area would enable a re-densification of this zone. Highly sloppy areas which are weakly urbanised could be preserved and reforested. Public maritime domains should be protected against all types of additional illicit constructions in order to maintain beach access.
- *Highway passage and relocation of economic activities:* The complete execution of the southern highway will significantly modify the mobility in and around Sarafand village. This would have a direct impact on the economic activities and their locations currently located all along the coastal area. Indeed, a large number of shops and car repairing workshops have passing trade. This clientele will reduce due to the highway. A part of merchants and craftsmen should delocalise to avoid closure of their clients unless they manage to create a commercial area sufficiently attractive to appeal to customers. This could be the case of some activities Sarafand is well known such as the hand-made glass production or furniture works.

**Photo 26: Highway**

- *Relocation of different activities – polluting versus non-polluting:* A large part of polluting activities is dispersed throughout the village circumscription. The creation of an industrial area would enable regrouping these activities and activating measures aiming at reducing or restraining pollution effect.
- *Management of spontaneous constructions:* Around 160 families are concerned with encroachment on public maritime domain (77 buildings). The re-lodging of these families into more adequate housings in Sarafand village could be envisaged with the aim to provide these inhabitants an appropriate legal status as well as access to land ownership. The seafront could be then rehabilitated, at least partially, to enable access of all inhabitants to the beach, welcome tourists and propose diverse services (hotel, accommodation, etc.).

**Photo 27: The seafront**

- *Management of public areas:* The management of some public spaces could enhance the services provided to the population, including the quality of life and increase the village attractiveness. Such services include public gardens, sidewalks, etc.

**Photo 28: Public areas**

- *Increase the value of tourism potentials:* religious and historical heritage as well as tourism resort.

**Photo 29:**
**The coast**

## Naqoura

### Geographical Situation

The municipality of Naqoura is located to the proximity of the Lebanese southern border. The village includes the land circumscriptions of Borj El-Naqoura and Iskanderouna. The highest point of Naqoura is located at 320 meters to the west of the village of Alma El-Chaab.

**Photo 30: Naqoura – panoramic view**

### Altitude

The altitude levels [less than 5 meters] constitute only 2% of the total surface area of the land circumscription. 19% of the total surface area has an altitude comprised between 5 and 50 meters. 20% of the territory is located at a level of [50-100 meters]. The level [100-150 meters] covers 16% of the total surface area. The bulk of the circumscription surface area has an altitude higher than 150 meters.

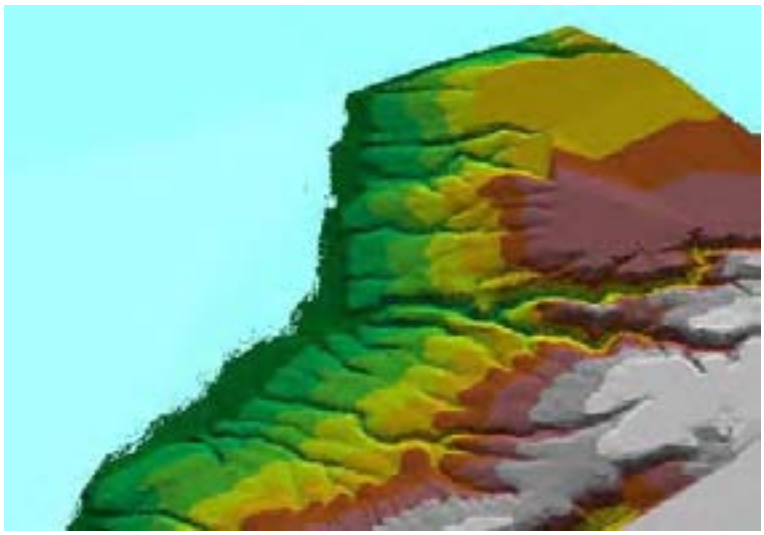


**Figure 8:**
**3D View of Naqoura village**

### Relief

The surface areas of slopes lower than 5% constitute 22% of the total municipal surface area. Around 47% of the lands are located on a slope ranging between 5% and 10%. Lands having slopes between 10% and 30% cover 29% of the surface area. Only 2% of the lands are characterised by a slope exceeding 30%.

### Urban Infrastructure

Urban zones increased between 1975 and 2002, passing from 2% to 7% of the total surface area. After a long stagnation period, the few years that preceded the South liberation have witnessed an increase in the number of construction.

### Urban Zones and Levels of Altitude

The part of the urban zones constructed on an altitude level lower than 5 meters was multiplied by 7.1 between 1975 and 2002. On the level [5-50 meters], the part of the urban zones exceeded the double during the same period. On higher altitude, the increase of urban zones was further moderate.

In 1975, 54% of the urban areas were located on the plateau [5-50 meters] and 32% were located on the plateau [50-100 meters]. In 1975, 54%of urban areas were located on altitudes higher than 100 meters. In 2002, there was relatively more constructed buildings on the coast and higher zones and less on the intermediary located areas.

The urban zones are mainly located on lands having slopes less than 5%. The lands having a slope ranging between 5% and 10% and those having a slope ranging from 10% to 30% are respectively concentrated 38% and 18.3%.

### Land Ownership

For the moment, Naqoura lacks a cadastral map; the cadastral services were not able to finish the boundaries work. This was due among other factors to the absence of land registry for the whole region; the documents having disappeared or burned during the war.

### Housing Stock

In 1996, the total number of buildings amounted to 415, among which 73.5% are characterised by one floor and 24.1% having 2 floors. Only 2.4% of buildings have more than 3 floors.

39% of buildings were constructed prior to 1975. During the war, 210 buildings (47%) were constructed. Between 1990 and 1996, the erection of 30 buildings only was recorded. 75 additional buildings were constructed between this period and 2000, which is the date of most recent survey. More than 85% of buildings are used as permanent (main) residence; 2% being secondary residences. Unoccupied buildings represent 14% of housing stock.

**Table 10: Building distribution according to number of floors in 1996**

| | Number of floors | | | | | |
|---|---|---|---|---|---|---|
| | **1** | **2** | **3 to 6** | **7 to 9** | **10 and +** | **Total** |
| **Number of buildings** | 305 | 100 | 10 | | | **415** |
| **%** | 73.5% | 24.1% | 2.4% | 0.0% | 0.0% | **100%** |

*Source: central Administration of Statistics, Building survey, 1996*

**Table 11: Building distribution according to date of construction**

| Date of construction | Number of building | % |
|---|---|---|
| 1950 and – | 1 | 0% |
| 1951-1960 | 3 | 1% |
| 1961-1970 | 46 | 11% |
| 1971-1975 | 116 | 28% |
| 1976-1980 | 99 | 24% |
| 1981-1985 | 95 | 23% |
| 1986-1990 | 26 | 6% |
| 1991-1993 | 20 | 5% |
| 1994 – 1996 | 10 | 2% |

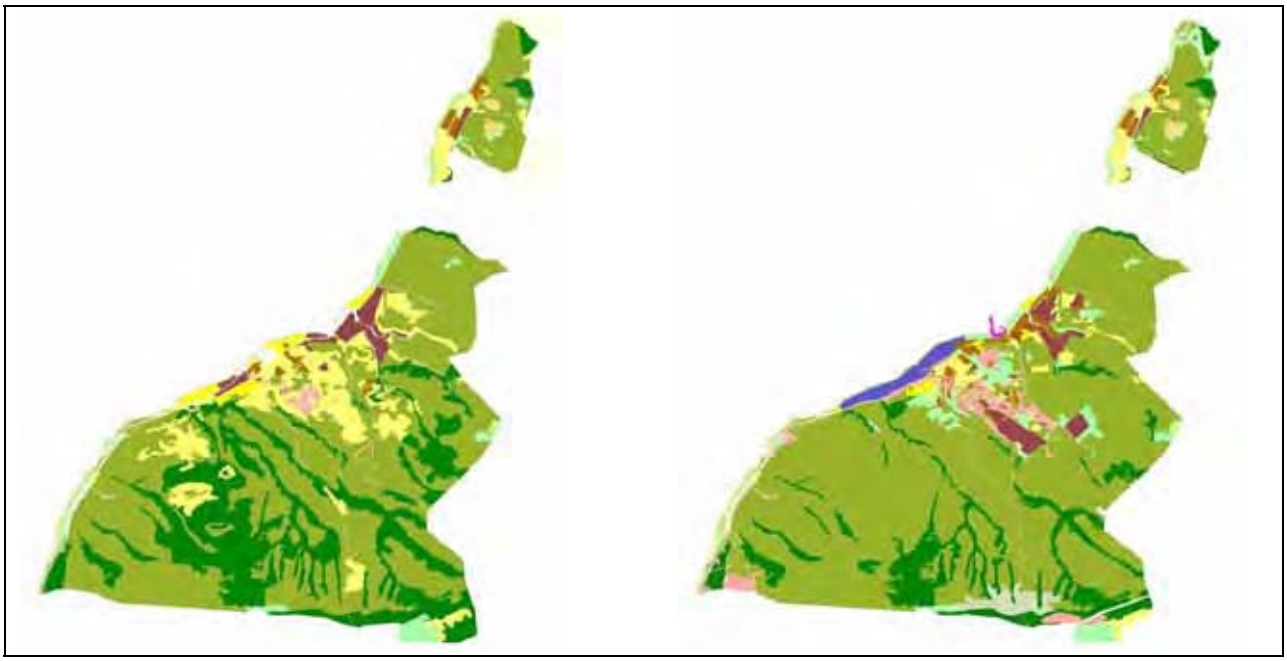
*Source: Central Administration for Statistics, Buildings survey, 1996*

## Land-use Change Between 1975 and 2002

Agricultural areas have decreased, passing from 14% to 7% only out of the total surface area. The Israeli occupation has had consequences on the agricultural activity which was long abandoned by inhabitants who left their village. Oppositely, natural areas have increased to 86% of total surface area.

Based on land-use maps between 1975 and 2002, one can observe the importance of woodlands which covered in 2002 around 80% of circumscription surface area; in opposition, a decrease in surface area dedicated to open field cultivations was observed. Following the Israeli invasion and occupation, an important part of the circumscription was mined, which made the peripheral agricultural lands dangerously accessible. Currently a de-mining programme is put into place, co-ordinated by the United Nations Programme.

**Photo 31:**
**Urban development and transformation of agricultural lands**



**Map 3: Land-use in 1975 and in 2002**

### Natural Areas

A major part of the land circumscription is covered with woodlands; a slight increase being observed between 1975 and 2002, with the abandonment of agricultural lands. However and paradoxically, the oak forest (4 km²) located on the border has lost some of its density due to military operations (forest fire and tree cutting to facilitate visibility). Herbaceous areas witnessed an increase in surface areas to reach 5% of surface area in 2002. The coastal road allows access to outstanding natural landscapes still protected against human constructions.

**Photo 32, Photo 33, Photo 34: Natural areas in Naqoura**

**Archaeological Areas**

Experts in cultural heritage working in the context of CAMP Project team revealed that Naqoura shelters a group of scattered archaeological and historical ruins all over the village circumscription; these ruins being of need for preservation. Any proposal for municipal planning has to integrate and take into account this preservation to reach an integrated economic and cultural development of the region.

**Agriculture**

The type of agriculture practised has radically changed between 1975 and 2002. Surface area dedicated to agricultural usage was reduced to its half. Accordingly, open field cultivations were divided by four. Equally, the surfaces dedicated to vegetable plantations were divided by three. The lands covered with olive trees have equally reduced to represent nowadays 1% only of the total surface area. On the other side, one can observe an increase in banana plantations which have doubled between 1975 and 2002. Citrus plantations have slightly increased.

Agricultural land conversion has reached 8.5% in 1963 and increased in 1998 to reach 8.9%. The conversion of woodlands was nil in 1963 and remained limited to 0.1% in 1998.

Tobacco plantation, essentially present in South Lebanon, is subject to governmental subsidy. However, such plantation is put through quotas: indeed, every farmer can only cultivate a maximum of 4,000 $m^2$. In the absence of any irrigation system, inhabitants use wells.

**Economic Activities**

*Industry*

There are no industries in the entire circumscription. Some car repair workshops are present all along the coastal area.

*Commercial activities*

Small shops are only found such as bakeries, small markets, etc.

*Services*

Two restaurants were found. A dozen of snacks were illegally constructed. They are located along the coastal area.

In 1978, the United Nations Interim Forces in Lebanon (UNIFIL) has established its general headquarter in Naqoura; different basements being set up in some villages of the area, headquarters have the capacity to host up to a maximum of 4,000 persons. UNFIL has developed its own services, such as a hospital, solid waste disposal, etc. On the other hand, the presence of an international force has provoked economic revenues. The decrease in number of soldiers has had a negative impact on the region's economy.

The return of displaced populations and their permanent reestablishment depend on the economic conditions as well as on services to be potentially developed. In the absence of job opportunities, the return of displaced inhabitants remains somehow limited. In the same time, the current political situation does not allow the development of traditional advantages of a village located on the border.

**Table 12: Number of establishments according to economic affectation**

| | Agriculture | Industry | Commerce | Services | Other | Total |
|---|---|---|---|---|---|---|
| **Less than 5 workers** | | 11 | 133 | 25 | 6 | **175** |
| **More than 5 workers** | | | 4 | | 1 | **5** |
| **Total** | **0** | **11** | **137** | **25** | **7** | **180** |

*Source: Central Administration for Statistics, Building survey, 1996*

### Population

In 1996, and based on CAS buildings survey, around 1890 inhabitants reside permanently in Naqoura. After nine years of time and based on the last survey carried out by CAS, this number has slightly increased to reach 2,460 inhabitants. It is understandable that UNIFIL army groups were not counted within this survey.

### Communication Network

*Traffic*

The main communication road is the coastal area that links Tyre to Naqoura. A highway project is planned to prolong the highway towards southern villages. The current highway proposal disfigures the village.

Average daily traffic counts 12,500 vehicles on the coastal area. The road linking Naqoura to Bint Jbeil is frequented by around 1,140 vehicles per day.

*Parking*

Due to weak population density, the village does not face parking problems. In 1996, 10% of buildings were provided with car parking.

Roads occupy 26.5% of total urbanised areas and 1.84 of total surface area.

### Wastewater Network and Solid Waste Discharges

According to CAS survey in 1996, only one building was connected to the wastewater network. An incomplete wastewater network discharges water effluents in Al-Ain Valley as an attempt to reduce sea contamination. A wastewater treatment plant is currently under study. On the other hand, the municipality collects municipal solid waste and disposes of them in an open dump together UNIFIL solid waste.

### Impact of Urban Regulations

Since 1973, Naqoura municipality is partially managed by the master plan of “southern beaches of Lebanon” (5450/73). The western section is reserved to touristic activities. This part could be dedicated to commercial and/or residential activities endowed with a land-use ratio of 40%.

Since 2001, the overall coastal area extending from the south of Tyre to the border and at an altitude reaching 250 meters is subject to a land-use study commissioned by the Directorate General of Urban Planning (DGUP). The objective was to protect the public domain all along the coast as well as to reduce the land-use coefficients. This master plan was not approved yet.

**Conclusion**

- *Impact of Israeli occupation:* Naqoura's urban development was- and still- heavily affected by the Israeli occupation for almost 2 decades. In particular, the land mining has curbed importantly private investments as well as the return of displaced populations. The important presence of UNIFIL forces and the establishment of their headquarter in Naqoura has had an impact on commercial and services provisions.
- *Geographical location: a border village:* Naqoura is the last locality on the coastal area before reaching the national boundary, the conflict situation and the border closure does not allow Naqoura to play the traditional role of bordering villages (key commercial centres just like the function Chtaura town plays for the Lebanese-Syrian border).
- *Weak return of displaced populations:* The number of populations returned almost permanently to Naqoura is quite weak. This is mainly due to feeble economic perspectives as well as the limited services provided to the populations. Since the liberation, a restricted construction development activity was recorded.
- *Archaeological wealth:* A noticeable number of archaeological ruins are present all over Naqoura locality. Actually, not any system of protection is put into place to protect these ruins that are currently under threat. Master plans at this time under elaboration have partially integrated this crucial component of South Lebanon.

**Recommendations**

- *Touristic development:* Naqoura is endowed with an exceptional natural site in Lebanon as well as wide range of archaeological sites, however weakly known and not valorised at all. By preserving the environment, the development of touristic activities could ultimately have a positive impact on the inhabitants' economic situation.
- *Protection of archaeological areas:* The protection of these areas is a priority especially that some of these ruins are heavily threatened nowadays due to human settlement constructions. Any ultimate planning shall operate to put into place a cultural path in Naqoura thus linking natural, touristic and archaeological areas to the core village.
- *Protection of fauna and flora:* Fauna and flora present, by their diversity (migratory birds, sea turtles, etc.) and the presence of threatened species, an important interest which should be highlighted and protected.
- *Reinforcement of landscape strength:* A master plan is currently under elaboration; nevertheless, and despite of its intrinsic qualities, the territorial vision is limited to providing construction coefficients and allocating functional areas. Therefore, it is necessary to couple this master plan with a landscape approach in order to reinforce the region's identity. This policy shall be translated into conserving view angles (sea, natural areas, archaeological sites, etc.), a matter that will increase the touristic attractiveness of the village and of the region as a whole.
- *Local stakeholders participation:* Local communities of Naqoura shall be strongly involved to ensure the success of any developmental policy.

# Integrated Water Resources Management

## Objectives of The Report

The main objective of the Integrated Water Resources Management (IWRM) component of the project is to assist in the elaboration of a water resources management strategy for the area and an action plan for each of the nominated pilot municipalities in order to ensure sustainability of water resources and cover their population's domestic, agricultural and industrial needs while preserving fresh and seawater quality. Objectives of the strategy are to be developed in close co-ordination with the municipalities in a participatory approach. The main output of this activity will be practical recommendations that incorporate IWRM principles and will assist the target municipalities in shifting towards a more sustainable management of their water resources.

The report provides the background on IWRM principles and tools necessary to develop a sound and sustainable strategy. It also provides a comprehensive review of the legal and institutional frameworks governing the water resources sector in the CAMP area, which need to be considered to ensure that recommendations do not conflict with the existing framework. The status of the water resources in the study area and pilot municipalities is presented and recommendations for protection, management and monitoring (indicators) of the resources are proposed.

## Outlook at the Legal Framework

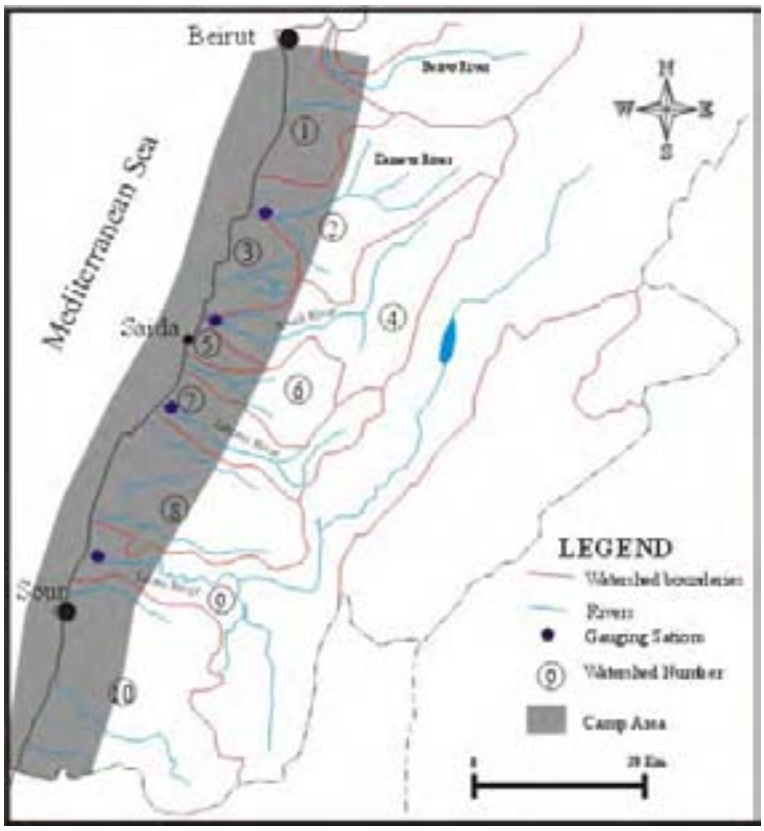
While a legal framework exists for the Lebanese water sector, it is not well organised and structured as to avoid mismanagement and overlap of responsibilities. The legal set-up presents several weaknesses such as:

- There are still no definite and specific laws organising surface water management; rivers are chaotically exploited quantitatively and qualitatively.
- There is no clear water right definition; this is leading to conflicts between different communities, and most of the times, agricultural fields are being adversely affected.
- Water consumption tariffs are still based on a lump-sum value and do not take into consideration the quantity of water consumed.
- The Lebanese legislative framework does not specify the parties responsible for surface water quality and quantity management; however MoEW is held responsible for dams and artificial lakes construction when needed.
- As to the underground water exploitation, there is no legislative document that organises underground water exploitation in terms of the distance or requirements that should be respected when drilling two near-sited wells for example.
- There is no legal document that deals with illegal wells spread all over the Lebanese territories, specifying penalties and responsible authorities.

Overlapping of responsibilities and gaps in water resources management are also quite evident. For instance, concerning water quality, there is a clear overlap in responsibilities concerning

testing, monitoring water quality and setting appropriate standards especially among MoEW, MoPH and MoE. This overlap may result sometimes in unaccomplished duties, and therefore unprotected resources adversely affecting the public health welfare

Another major deficiency in the institutional set-up for water resources management in Lebanon is that the four water and wastewater establishments are based on jurisdiction boundaries rather than watersheds or river basins, which would lead to a more efficient management of water resources, if properly planned. This is a major drawback in the water management structure in Lebanon that hinders the implementation of IWRM principles and sustainable water management.




**Map 4:**
**Delineation of CAMP area and watershed boundaries**

As a summary, the Lebanese government needs to have a water code law, tackling water related issues from cradle to grave. It has to specify responsible institutions for surface and groundwater management issues and eliminate all kinds of overlaps in responsibilities and duties among different governmental and institutional bodies. It has also to solve surface and ground water quantity and quality related matters, ownership issues, exploitation tariffs, and penalties issues.

## Water Resources Management in the CAMP Area

Water Resources within CAMP area used to fall under the jurisdiction of four water authorities: Beirut Water Authority (BWA), Barouk Water and Irrigation Authority (BWIA), Nabaa El Tasseh Water Authority (NWA), Saida Water Authority (SWA) and Tyre Water Authority (TWA). Recently and according to the New Water Law 241/2000 that reorganises the existing 22 local water offices into four regional water establishments, CAMP area water resources would fall under the management of only two water authorities. The Northern portion of the CAMP area extending from Khalde to the Awali River would fall under the jurisdiction of the Beirut

and Mount Lebanon Water Establishment, whereas the remaining area extending southward to Naqoura would fall under the South Lebanon Water Establishment.

### Surface Water in CAMP Area

Four major and several minor rivers cross the CAMP area. The four major rivers, starting from the north, are the Damour River, the Awali River, the Zahrani River, and the Litani River (Qasmieh River). The minor rivers include from the north to the south Saitaniq, Abou Assouad Rivers and Aazziye River. The major and minor river basins form ten (10) watersheds that extend beyond the boundaries of the CAMP area to the north, south and east (Map 4).

The average yearly yield of surface water discharging into the sea from the five major rivers in the south is approximately 874.3 $mm^3$. In the seasonal year 2000-2001, the total volume of water discharging into the sea from the five major rivers was approximately 280 $mm^3$, which represents a 70% reduction compared to the yearly average. Note also that approximately 75% of this amount is discharged during the rainy season between December and April (Figure 9); this period represents the months of the year when the water is least needed. Two rivers, the Zahrani and the Saitaniq, dry out completely during 8 months of the year. Three rivers are permanent, the Litani being the most important in terms of discharge.

**Table 13: The different watersheds crossing the CAMP area (Dar Al-Handasah, 1996)**

| Watershed Number | Watershed Name | Comments |
|---|---|---|
| 1 | Khaldé | The watershed is characterised by the presence of several small seasonal rivers including Yabés and Ghadir rivers form the coastal Khaldé watershed |
| 2 | Damour | Two main rivers, the Es Safa River and Zeble River, converge to form the Damour River; a third affluent, El Hamman River, converges into the Damour River just uphill the coastal plain; the Damour River forms a watershed that has an area of about 304 $km^2$ and originates at an altitude of approximately 1,948 m |
| 3 | Barja | Barja watershed is composed of several seasonal rivers including Ouadi el Zeini River; this is a coastal basin with an area of about 100 $km^2$ |
| 4 | Awali | The Barouk River and Aaray River converge to form what is known as the Bisri River; in its lower section, the river is named as Nahr Awali; the Awali River forms a watershed that has an area of about 294 $km^2$ and originates at an altitude of approximately 1,942 m |
| 5 | Saida | Saida watershed is a coastal basin with several seasonal rivers, it covers an area of about 32 $km^2$ |
| 6 | Saitaniq | Chemis River and Jannet River converge to form the Saitaniq River; the watershed of the Saitaniq River has an area of about 140 $Km^2$ and originates at an altitude of approximately 1,418 m |
| 7 | Zahrani | The Zahrani River is also known as Ouadi El Akhdar in its upper reach; the Zahrani watershed covers an area of about 106 $Km^2$ and originates at an altitude of approximately 1,418 m |
| 8 | Aadloun | The Aadloun watershed covers an area of approximately 290 $km^2$ with Ouadi Abou Assouad as its main seasonal river |
| 9 | Litani | The Litani River originates from various karstic springs from the Bekaa valley; its lower section receives affluent of Ouadi Ghandouriyeh. The Litani River in its coastal section forms the Qasmeih watershed |
| 10 | Tyre | Various small valleys desiccate the Tyre watershed (Nahr Abou Zeble, Nahr Aazziye, Ouadi Ain Chamaa and Ouadi Ain Zaraa). Aazziye River, with watershed covering about 154 $km^2$, originates at low altitude hills and has a minor contribution to the water resources of Lebanon |

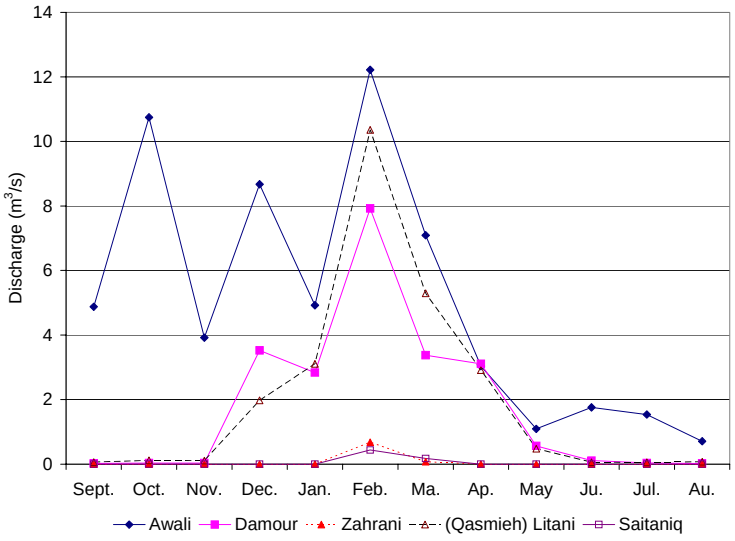



**Figure 9:**
**Hydrographs of the major rivers within the CAMP area (years 2000-2001)**

One can notice that during the last ten years the volume of discharge from the mouth of those major rivers has decreased dramatically. Such a decrease in volume can be attributed to two major possible reasons:

- Climate change, primarily through decrease in precipitation levels;
- Human exploitation of source springs, surface water, and / or aquifers (leading to an increase in the infiltration (recharge) from the river to the aquifer).

**Groundwater in the CAMP Area**

Most of the water supply in the CAMP area is derived from groundwater through wells or springs. The Sannine Aquifer is the main aquifer being exploited in the region. The Eocene and Kesrouane Aquifers are also being used to a lesser extent. These aquifers extend beyond the boundaries of the CAMP area to the north, south and east.

*Sannine aquifer*

The Sannine Aquifer, of Middle Cretaceous age, is the major groundwater source for the CAMP area. The hydrogeological boundaries of the Sannine Aquifer extend beyond the boundaries of the CAMP area. The exposure of the Sannine Aquifer reaches approximately 843 $km^2$. In order to estimate the recharge of the aquifer within the CAMP area, three major sources are considered:

- direct infiltration from rainfall;
- surface water infiltration from rivers; and
- groundwater leakage from overlying aquifers.

Direct infiltration from rainfall is the major source of recharge to the Sannine Aquifer. Assuming a precipitation rate of 850 mm / year (Meteorological Service of Lebanon, 1970) over the entire outcrop and an infiltration rate of approximately 40% (UNDP, 1970), the total recharge from infiltration is estimated at about 286.6 $mm^3$ / year. The used figure for infiltration is extracted from the most detailed hydrogeological study that has been conducted in Lebanon (UNDP, 1970).

Surface water, mainly from river, also contributes to the recharge of this aquifer. Surface water from Zahrani River is being recharged to the Sannine Aquifer at a rate of about 2 $mm^3$ / year

(LRA, FAO and UNDP, 1973). Moreover, approximately 18 $Mm^3$/year of surface water from the Saitaniq River is being recharged into the Sannine Aquifer based on the same study. The total discharge from the Sannine Aquifer to the Awali River is approximately 26 $Mm^3$/year. Unfortunately, an estimation of the loss or the intake from the Damour and Litani Rivers to the Sannine Aquifer is not available and can not enter into the balance. Although the Litani and the Damour are perennial rivers, their effect on the aquifer is not well understood due to the lack of adequate studies.

**Table 14: Major characteristics of the Sannine hydrogeological provinces**

| Sannine aquifer | Section | Contact with sea | Conditions | Status |
|---|---|---|---|---|
| Coastal Province | Khalde-Saida | Direct contact | Water table | Over Exploited |
| | Saida -Refinery | Indirect contact | Confined | Over Exploited |
| | Brak | Indirect contact | Artesian | Over Exploited |
| | Sarafand-Kharayeb | Direct contact | Water table | Over Exploited |
| | Tyre-Ras-El Ain | Indirect contact | Artesian | Over Exploited |
| | Azziye-Naqoura | Direct & indirect contact | Water table & confined | OK |
| Inland Province | Baaqline-Jabal Aamel | Not Applicable | Water table | Over Exploited |

In addition to the above-mentioned sources, groundwater leakage from the overlying Eocene Aquifer and the Quaternary Aquifer also contributes to the recharge of the Sannine Aquifer. A volume of approximately 12.5 $Mm^3$/year is infiltrating from the Eocene Aquifer in the Nabatiye area (LRA, FAO and UNDP, 1974). Last but not least it is likely that the recharge of the Sannine Aquifer might also occur from adjacent provinces via major faults such as the Roum Fault. In sum, the estimated total annual recharge of the Sannine Aquifer amounts to about 293 $mm^3$.

*Eocene aquifer*

The second most important aquifer in CAMP area is the Eocene aquifer. This aquifer is essentially composed of calcareous marl that grades laterally into limestone further away from the sea. The Eocene Aquifer extends along the coast and its limestone and marl beds are inclined towards the sea. The Eocene Aquifer along the coast is mainly under water table conditions. The coastal Eocene outcrops cover an area of about 227 $km^2$.

Similarly to the Sannine Aquifer, direct infiltration from rainfall is the major source of recharge to the Eocene Aquifer. Assuming an average rainfall of approximately 800 mm/year (Meteorological Service of Lebanon, 1970) and an infiltration rate for the Eocene Aquifer that ranges between 28 and 35% (UNDP, 1970), the estimated recharge would vary between 50 and 63.6 $mm^3$/year. Note that the average precipitation value used is lower than that used in the case of the Sannine Aquifer because the Eocene Aquifer outcrops closer to the coast, where precipitation levels are lower. The effect of the major rivers to this aquifer is not well understood. However, major rivers (e.g. Litani) pass a short distance over this aquifer before discharging into the sea.

*Quaternary aquifer*

The Quaternary Aquifer is not considered as a major aquifer in the CAMP area due to its proximity to the sea and its limited thickness (not exceeding 20 m). This aquifer is present as a coastal stretch in the Damour coast and between Saida and Tyre. It is composed mainly of reddish brown sands and clays as well as conglomerates. Generally it is recharged from direct

precipitation, return flow from irrigation and seepage from rivers. In several locations along the coast the Quaternary Aquifer is recharged from underlying aquifers that are under confined conditions such as in Brak and Ras El Ain. This aquifer is under water table conditions with shallow water table.

*Kesrouane aquifer*

The Kesrouane Aquifer, of Jurassic age, is considered one of the major aquifers in Lebanon. It consists of a monotonous sequence of limestone and dolomite. It is characterised by secondary porosity and by the presence of preferential karstified channels. Although not having a large surface exposure, the Kesrouane Aquifer could become an important groundwater resource in the CAMP area. It outcrops as an elongate stretch in the valley of Damour River east of Damour village.

*The hydrogeological provinces of the Sannine aquifer*

*The coastal province*

In the areas extending from Khaldeh to Naameh and from Saadiyat to Saida, the Sannine Aquifer is in direct contact with the sea. The underground fresh water mixes with the seawater. The thin freshwater lens is being heavily exploited in this area, where a large number of wells exist. These wells are being used for domestic, industrial, and irrigation purposes. Examples include wells in Khalde, Naame, and Saadiyat. For instance, Total Dissolved Solids (TDS) and chlorides concentrations in a water sample from a well in Saadiyat were 1850 mg/l and 1240 mg/l respectively, which are relatively high.

In the Damour area, the Sannine Aquifer is protected from direct contact with the sea by the Chekka Formation. This resulted in the establishment of an important quantity of water that is larger than those on the northern and the southern parts of this hydrogeological province. Nevertheless, the aquifer appears to be overexploited as noted by the increase in salt content with time.

In the area extending from Saida to the Refinery, despite the fact that the Chekka Formation and the Eocene Aquifer protect the Sannine Aquifer, seawater intrusion has already been noted. More than 116 wells are tapping the Sannine Aquifer between Saida and Refinery. TDS concentrations, as measured in August 2000 in two municipal wells in Saida, were 500 mg/l and 455 mg/l (ARD, 2000).

In the Brak area, the Sannine Aquifer is flowing under artesian conditions. The Sannine Formation is hydraulically connected to the Eocene and Quaternary Aquifers despite the presence of the Chekka Formation. The hydraulic connection is likely attributed to the presence of faults and fractures that act as preferential pathways. More than 34 wells are located in the Brak area. These wells are mainly used for irrigation. The yearly water consumption of this area alone amounts to approximately 22.75 $Mm^3$.

The piezometric level of the Sannine Aquifer can reach several meters above mean sea level. Analysis of TDS of a well in June 2001 showed values averaging 690 mg/l (ARD, 2001).

The area extending from Sarafand to Kharayeb is characterised by the presence of the Sarafand syncline that trends in a northern direction (ARD, 2001). This resulted in the outcropping of the Sannine Aquifer along the coast such as in areas of Insariye, Aadloun and in the valley of Abou Assouad. This aquifer is under water table condition and is characterised by the presence of seawater intrusion due to the direct contact with the sea. The piezometric level is controlled by the seawater level. Brackish water was reported in numerous wells tapping this aquifer such as in Sarafand. The municipality well in Sarafand exhibited a TDS value of 630 mg/l. The water is

at high concentration of salts in Aadoussiyé area (UNDP, 1970). In the well of Babliyé, the saltwater intrusion is noticed 3 km inland (UNDP, 1970). The feature persists to Qasmiyé where the saltwater / fresh water interface starts to approach to the sea.

In the area extending from Tyre to Ras El Ain, groundwater is available in large quantities and the presence of faults results in corridors of salt-water intrusion in certain areas. Important fresh groundwater sources exist, namely Ras El Ain, Rachidiyé and Qasmiyé. The first two are under artesian conditions and pass through the 300 m-thick Chekka and Eocene Formations and the second is at the contact between the Sannine, Chekka and Eocene Formations. The discharge regime of Qasmiyé and Ras el Ain is poorly understood. The Ras El Ain source discharged approximately an average of 9.5 $Mm^3$ / year in the last three years based on measurements from LRA. Discharge for Ras El Ain and Rachidiyé reaches approximately 1.02 $m^3$ / s (UNDP, 1970). The Qasmiyé is situated in the Litani valley. The only reliable discharge measurements of this spring were made during the years 1966-1967 and 1967-1968, and were estimated at 1.6 and 1.8 $m^3$ / s, respectively.

In the area extending from Azziye to Naqoura, the Sannine Aquifer is in direct contact with the sea. The Sannine Aquifer in this section has two water bearing zones separated by a relatively impermeable layer that acts as a protection zone for the lower water bearing unit from salt water intrusion. This resulted in acceptable quantities of water in this coastal zone. However, water samples have indicated that saltwater intrusion could be initiating, even in that area.

*The inland province*

This area extends from the outcrops of the Sannine south of Baaqline passing though outcrops in Roumine and Deir El Zahrani and ending in Jabal Aamel. The groundwater in this section of the Sannine Aquifer is under water table conditions and is found at depths exceeding sometimes 500 m as in Harouf and Deir el Zahrani and 600 m as in Qaaqaiet el Jisr. Aquifer budget calculations indicate that this aquifer is being overexploited.

*Groundwater wells in the CAMP area*

The result of the well investigation revealed the presence of about 826 wells in the whole CAMP area and Sannine Aquifer of which 208 (25%) are public water supply wells, and the remaining 618 (75%) are private wells. This number represents of course only a portion of the total number of wells available in the CAMP area, but provide sufficient basis to generate initial statistics and estimations on water consumption within the study area. The distribution of these wells in terms of usage and type of aquifer tapped is indicated in Figure 10.

The total yearly estimated volume of water exploited from wells varies from about 160 to 235 $mm^3$ / year. The total estimated volume of water exploited from wells tapping the Sannine Aquifer and the Eocene Aquifer ranges between 132 and 195 $mm^3$ / year and 35 to 50 $Mm^3$ / year, respectively.

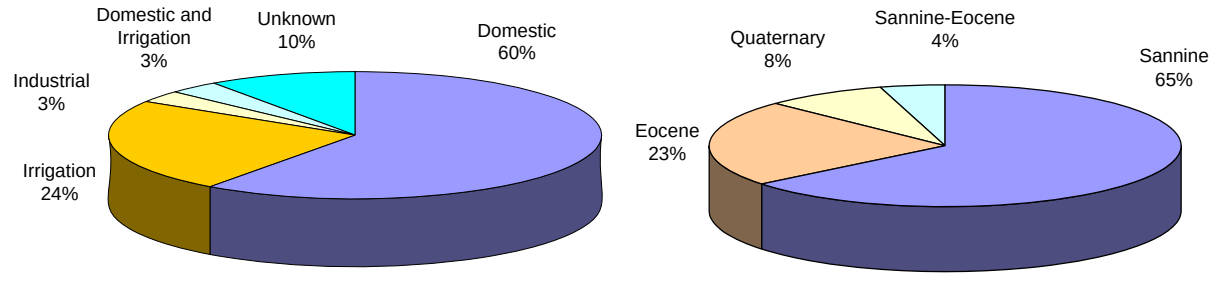



**Figure 10: Distribution of wells in the CAMP area by water usage and by type of aquifer tapped**

*Springs in the CAMP area*

The result of the spring survey revealed the presence of 15 major springs in the study area, with 13 springs emerging from the Sannine Aquifer and 2 discharging from the Eocene Aquifer. Most of the springs are used for irrigation and domestic purposes. The most important of these springs are the Rachidiyye, Ras El Ain and Qasmieh springs. The total estimated discharge rate of these major springs discharging from the Sannine Aquifer reaches approximately 224.8 $mm^3$/year. The total discharge of major springs from the Eocene Aquifer is approximately 14.2 $mm^3$/year.

### Water in CAMP Area: Need for Action

Whether we consider the conditions of surface water or groundwater, the CAMP area is in serious need for action. Surface water availability has been decreasing in the last decade. Groundwater aquifers are being exploited heavily, which has led to saltwater intrusion in almost the entire coastal stretch of the CAMP area. Note that discharge from the Sannine Aquifer exceeds in all cases recharge into the same aquifer. Besides, these estimates are made based on a sample of the total number of wells actually available within the CAMP area. The number and figures are quite alarming, and the need to develop and implement an integrated water resources management plan is urgent.

**Table 15: Water balance for major groundwater aquifers in CAMP area**

| Quantities ($Mm^3$/year) | | | Sannine Aquifer | Eocene Aquifer |
|---|---|---|---|---|
| Recharge | | | 293.1 | 63.6 |
| Discharge | Springs | | 224.8 | 14.2 |
| | Wells | Low | 132.0 | 35.0 |
| | | High | 195.0 | 50.0 |
| Balance | Low | | - 63.7 | 14.4 |
| | High | | - 126.7 | -0.6 |

## Water Resources Management in Damour

### Legal and Institutional Frameworks in Damour

Damour used to fall under the jurisdiction of Barouk Water and Irrigation Authority; after the emergence of the New Water Law it will be part of the newly established Beirut and Mount Lebanon Water and Wastewater Establishment. The municipality is currently successfully managing by itself two wells for domestic water consumption located within its municipal boundaries. In addition, the municipality is also managing the distribution of the Damour river water to agricultural fields located mainly in the Damour plain. Improved co-ordination between the Damour municipality and the water establishment would help avoid conflicts in the future related to water resources management in the area.

One main legal and institutional problem specific to the Damour area is related to the management of the Damour River water. Current legislations do not handle the issue of the distribution of the river water among neighbouring lands and villages and do not specify responsible bodies to manage such distribution. Damour farmers have stated on their land ownership certificates the right to irrigate their lands located in the plain using the Damour river water. However they have been facing water shortages especially during summer because

of overexploitation of upstream river water. Legislation is also not clear about who is responsible to monitor river water quality.

### *Water supply in Damour*

#### *Surface water in Damour*

The major river that passes through the Damour area is the Damour River. This river is one of the 17 perennial rivers in Lebanon. It originates at an altitude of 948 m well beyond the study area to the east. Safa and Barouk springs, along with other smaller springs, supply the river with water throughout the year. The total length of this river is 40 km with the last 8-10 km crossing the CAMP area. Two dams are constructed on the Damour River to divert part of the water for irrigation purposes. The lower dam diverts approximately 1,100 $m^3$/hour and the upper dam diverts about 650 $m^3$/hour.

#### *Ground water in Damour*

The groundwater resources in the Damour area are mainly stored in the Sannine Aquifer. In the Damour area, the Sannine Aquifer is being protected from direct contact with the sea by the Chekka Formation. This has resulted in the development of an important source of groundwater. In the Saadiyat area, the Sannine Aquifer is in direct contact with the sea and the fresh water is mixed with the salt water. Recharge of the Sannine Aquifer in the Damour area is primarily from direct infiltration and infiltration from Damour River. As indicated previously, the area of recharge extends westward well beyond the CAMP area. The Sannine Aquifer is being exploited through artificial wells and natural springs.

The total volume of water that is being pumped from Damour and exported to Beirut from July till January is 7.2 $mm^3$ according to the Beirut Water Authority. The total estimated consumption from wells in Damour ranges between 1.14 and 1.7 $mm^3$/year. These values reach 8.9 $mm^3$/year when wells of Beirut water authority are operating. It is interesting to note that based on the present estimations and information from Beirut Water Authority, approximately 80% of the total quantity exploited from Damour is used outside Damour.

#### *Water supply infrastructure in Damour*

The municipality operates two wells (5000 $m^3$/day) that pump for approximately 5 to 10 hours per day according to the season, and generate between 880 $m^3$/day and 1360 $m^3$/day. One major reservoir (2000 $m^3$) is used to store the water, which is distributed within Damour.

The municipality charges housing units connected to the main water network 100,000 Lbps per year for unlimited supply of water. A limited zone of Damour is being supplied by the Meshref wells field and Beirut water authority in El Hamra and Mar Mkhael regions respectively.

Irrigation water is primarily obtained from the Damour River, where two dams store water that is directed though irrigation channels to the agriculture fields. The municipality charges agricultural landowners 30,000 Lbps per 1000 $m^2$ per year. Note that in the Saadiyat area, the main source of domestic and irrigation water is through private wells. Last but not least, Damour faces the problem of water withdrawal from within its boundaries to serve other regions. It is worth mentioning that according to Beirut water authority data, the Damour area provides 10% of the total water consumption of the Beirut area which is about 500,000 $m^3$/day. On the other hand, the Damour River is being highly exploited by up stream neighbouring villages, especially through wells upstream that induce recharge from the Damour River, thus diminishing its discharge at the Damour plain. As a matter of fact, the plain faced water shortage during summer 2001, and farmers had to exploit existing and new wells to satisfy irrigation water needs.

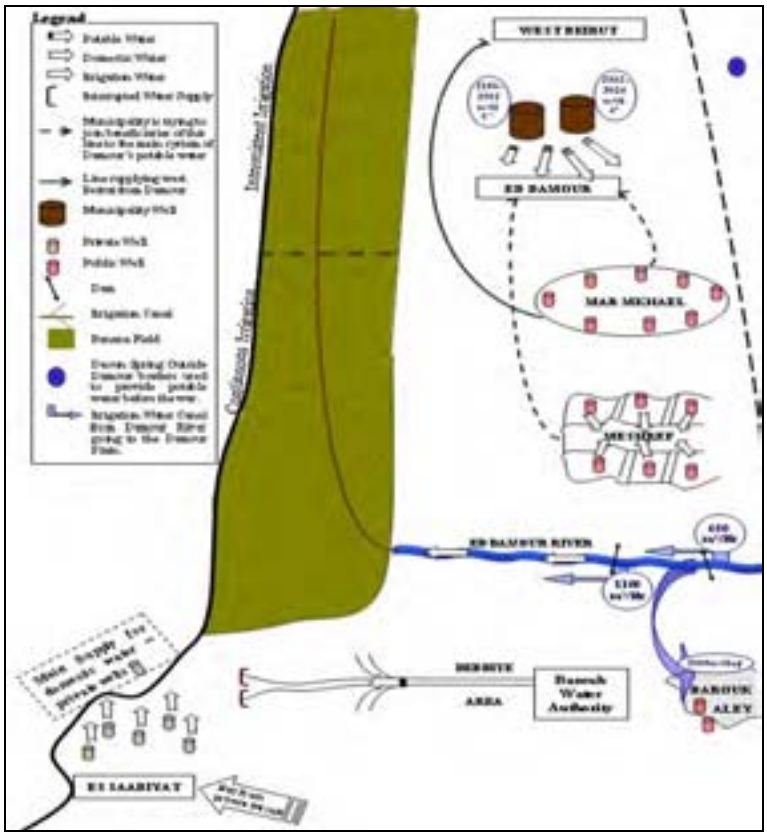



**Figure 11:**
**Illustration of water supply infrastructure in Damour**

*Water demand in Damour*

Water demand in Damour is primarily from domestic and agriculture origins. While domestic consumption is derived from groundwater wells, irrigation water is mostly obtained from the Damour River.

*Domestic water demand in Damour*

Fields surveys have been conducted in the Damour region. Domestic water consumption in the Saadiyat area was estimated to range between 340 and 400 L/c/day. Estimated values for daily water consumption in the Damour area range however between 130 and 170 L/c/day. While the domestic consumption in Saadyiat is higher than typical average domestic consumption values (150 L/c/day), consumption in Damour is within the regular range.

Due to the absence of a metering system in Damour, it is very difficult to calculate losses in the networks. Discrepancies between water supplied by the municipality and water consumed can be attributed to unaccounted for water consumption (in construction activities, etc.) and to losses in the networks. The values fall however typical values for water losses in water supply networks reported in Lebanon.

**Table 16: Estimations of water losses or unaccounted for water in the Damour area**

| | Quantities of water supplied by the municipality (L/c/day) | Actual water consumption (l/c/day) | Losses (%) |
|---|---|---|---|
| Winter | 180-270 | 134 | 25-50 |
| Summer | 311-418 | 170 | 45-61 |

*Agriculture water demand in Damour*

The theoretical water demand is the one that meets the needs of the crops based on site specific conditions (climate, soil). At the same time, 364,400 $m^2$ of agricultural land were surveyed in order to obtain information about the local irrigation practices and estimate the actual values used for irrigation. It can be noted that farmers irrigating using the trickle technique have a much better control of water consumption than those using surface irrigation. In the latter case, actual water consumption exceeds theoretical values by more than 50% during winter and more than 150% during summer (more than twice the theoretical value).

**Table 17: Irrigation water consumption in Damour**

| Irrigation Technique | Season | Actual water consumption ($L/m^2$/day) | Theoretical water consumption ($L/m^2$/day) | Over use (%) |
|---|---|---|---|---|
| Surface | Summer | 16.7 | 6.6 | +150.0% |
| | Winter | 8.7 | 5.9 | +47.0% |
| Trickle | Summer | 4.7 | 4.4 | +6.8% |
| | Winter | 2.7 | 3.1 | -13.0% |

*Water quality in Damour*

Both groundwater and surface water quality are at risk in Damour due to overexploitation and lack of adequate sanitation and proper environmental practices.

**Table 18: Water quality results for Damour samples**

| Sample ID | TDS (mg/L) | Chlorides (mg/L) | Nitrates (mg/L) | O-Phosphates (mg/L) | Faecal Coliforms (CFU/ 100 mL) | COD (mg/L) |
|---|---|---|---|---|---|---|
| D1 | 547 | 174 | 30 | 0.18 | 0 | NA |
| D2 | 239 | NA | 19 | 0.27 | 126 | <2 |
| D3 | 222 | NA | 12 | 0.17 | 13 | 16 |
| D4 | 1850 | 1240 | 14 | 0.11 | 0 | NA |
| D5 | 313 | 20 | 5 | 0.10 | 0 | NA |
| D6 | 667 | 239 | 16 | 0.13 | 0 | NA |
| D7 | 612 | 212 | 12 | 0.27 | 0 | NA |
| Guidance Value [a] | - | 25 | 25 | 0.40 | - | - |
| Maximum Admissible Value[a] | 500 | 200 | 50 | 5.00 | 0 (domestic)<br>200 (irrigation) | - |

[a] *All values according to Ministerial Decision 52/1 issued by the MoE, except for TDS where EPA standards are included and faecal coliforms where EPA standards for irrigation are used.*

A recent report (CAMP / ARD, 2003) has highlighted the different environmental violations on the Damour River Basin, which include disposal of untreated sewage from most villages, disposal of restaurants wastewater, industrial wastewater (olive oil, stone cutting, concrete and asphalt), waste oil from gas stations, farm wastes, and use of pesticides and fertilisers.

**Water Resources Management in Sarafand**

*Legal and institutional frameworks in Sarafand*

Sarafand used to fall under the jurisdiction of Nabaa El Tasseh Water Authority in terms of potable water but after the emergence of the New Water Law it will become part of the newly

established South Lebanon Water and Wastewater Establishment (SLWWE). While the new water law states that such establishments are responsible for domestic, irrigation and waste water issues, the SLWWE will be responsible to manage domestic and waste water issues only, since the LRA is already taking care of irrigation projects in the South region (Nizam A., 2003).

*Water supply in Sarafand*

*Groundwater in Sarafand*

The two aquifers outcropping in Sarafand are the Eocene and Quaternary Aquifers. The Quaternary Aquifer outcrops along the coast and in the valleys. The Eocene and Sannine Aquifers are under unconfined conditions. Previous studies (UNDP, 1970) show that the Sarafand area is characterised by the presence of seawater intrusion due to the direct contact of the Sannine Aquifer with the sea. Furthermore there are few abandoned wells exceeding 500 meters in depth, present in the Zaatare farmland in Dhour El Sarafand and tapping the Sannine aquifer. All the pumping wells in the Sarafand area are tapping the Eocene aquifer. This aquifer is slightly affected by saltwater intrusion since brackish water was reported in some wells. Moreover the Eocene aquifer is characterised by a relatively low discharge.

A total of 153 wells were surveyed in the Sarafand area. The total estimated amount of ground water extracted from those wells ranges from 4 to 6 $mm^3$/ year. One of the wells is public and owned by the Nabaa Tasseh Water Authority. The public well is mainly being used for domestic purposes. The private wells are being used for both irrigation and domestic purposes.

Six springs are present in the Sarafand area. Ain el Qantara and Ain el Hemma are coastal Quaternary springs discharging 371.5 and 86.4 $m^3$/ day, respectively. Ain el Qantara is being used to fill a swimming pool in a beach resort. Ain el Hemma is not being currently used. Few fishermen use it for drinking purposes. Spring Bou Daynayn and Ain el Jdideh are small springs having discharges of approximately 4.3 and 2.9 $m^3$/ day, respectively. Both are discharging from the Eocene Aquifer and are being used locally for domestic purposes. The Ain el Dellieh is a very small seepage zone. Note that there exists a sixth spring called Ain Mahmoud located in the village. This spring flows in significant quantities especially after a heavy rainfall. This spring discharges on the main street and it is locally used, when available, by few houses.

**Photo 35:**
**Ain El Hemma spring**

*Water Supply infrastructure in Sarafand*

Domestic water is supplied to Sarafand primarily through Teffahta wells, which provide about 1,000 $m^3$ of water per day according to Nabaa el Tasseh water authority. Moreover the municipality well located in Dhour El Sarafand provides 300 $m^3$ of water per day that are mixed with the quantity that is supplied by Teffahta and distributed through the Water supply Network.

However, despite the fact that the totality of the village is connected to the water supply network, only 1200 housing units, i.e. less than 50% of the total number of housing units are subscribed to the Water Authority service. In order to subscribe to the main public network, each housing unit in Sarafand has to pay 250,000 Lbps for the connection and 220,000 Lbps as an annual fee. Hence those who can not afford to pay such fees prefer to use their private wells, especially that operating these wells costs annually between 150,000 Lbps and 180,000Lbps, which is less than the subscription fee to the public network. Note that more than 50% of the Sarafand is using private domestic wells located throughout the village, and few springs with low discharge.

The Litani Irrigation Canal provides water for the agricultural plains situated close to it, whereas private irrigation wells provide water to the irrigated areas of Dhour Es Sarafand, Jlali El Naouar, and a small section of the coastal plain. There are 300 subscribers to the Litani Canal supply system, and they pay 60,000 Lbps per 1000 $m^2$ of irrigated land. This fee is reduced to 40,000 Lbps in case they irrigate their land using more efficient irrigation techniques such as the trickle technique instead of surface irrigation.

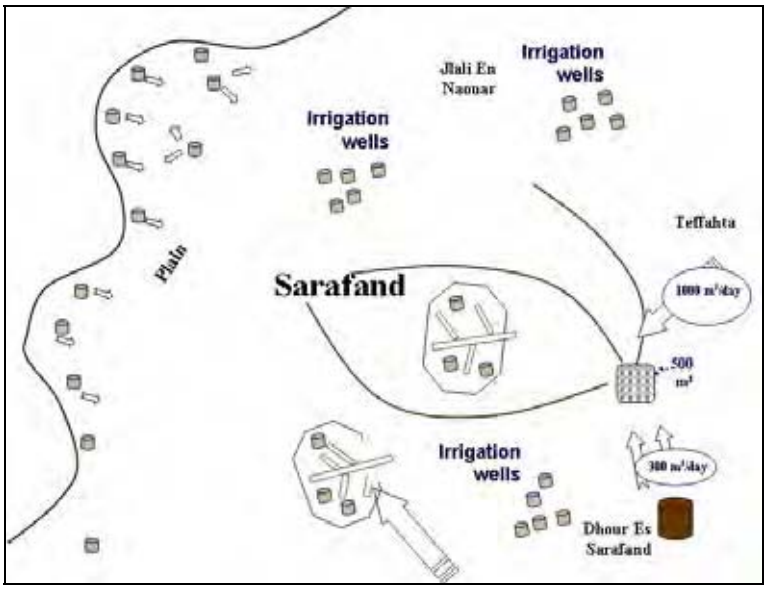



**Figure 12:**
**Illustration of water supply infrastructure in Sarafand**

*Water demand in Sarafand*

*Domestic water demand in Sarafand*

The use of private wells is widespread in the Sarafand area. Domestic water consumption was estimated using data such as diameter of the rising pipe, pump power, hours of operation of the wells, and number of persons using the well. On the other hand, for the portion of the population using water coming for Teffahta, water consumption was deduced from the reservoirs capacity, the number of times the reservoirs are filled per week, and the number of persons in the housing unit using this water resource. Estimations showed that domestic water

consumption in Sarafand ranges between 190 L / c / day and 210 L / c / day. Estimation of losses was difficult to perform because the number of people using the public water supply system is not well defined due to many illegal *connections to the system.*

*Agriculture water demand in Sarafand*

The ARD team surveyed an area of 1,044,500 $m^2$ of agricultural lands (about 20% of total agriculture land area in Sarafand). Actual values exceed theoretical values by 40 to 300%, indicating a significant potential for water savings. This is probably due to inadequate use of the water because of its availability from the Litani Canal, even though water is not regularly supplied by the LRA, according to the farmers. Note also that the highest levels of over use are related to surface irrigation techniques, which are more difficult to control the water consumption.

**Table 19: Irrigation water consumption in Sarafand**

| Mode of Irrigation | Irrigated surface ($m^2$) | Actual irrigation water consumption ($L/m^2$/day) | Theoretical irrigation water consumption ($L/m^2$/day) | Type of irrigated Crops | Over use (%) |
|---|---|---|---|---|---|
| Surface | 877,000 | 12-13 | 3.5-4.5 | Vegetables Citrus | 150-300 |
| Sprinkle | 12,000 | 6-7 | 3.5-4.0 | Citrus Banana | 70-100 |
| Trickle | 150,000 | 5 | 3.5 | Banana | 40 |

*Water quality in Sarafand*

Water quality data is not abundantly available for the water resources in Sarafand. A limited number of samples was collected and analysed to fill as much as possible the lack of information, and at least provide an indication of the level of water pollution in the area Results indicate the possible presence of biological, agricultural and seawater contamination.

Ain El Hemma, Ain El Qantara on the coast, and Ain Bou Daynayn springs show values of faecal coliform that exceed the admissible value for domestic use. It is worth noting that Ain Bou Daynayn is being used for drinking and domestic purposes by three nearby houses. It has been noticed that children from these houses have stomach-aches and bad digestive behaviours probably due to the high values of faecal coliforms in the drinking water. This spring is probably contaminated by the wastewater that is being discharged upstream in Hay Es Sarassir where the sewage network is missing.

Other samples, particularly the Spring El Qantara sample and the irrigation well sample show relatively high values of nitrate that exceed the admissible values. These excessive levels of nitrates, especially in the irrigation well (S1) located in the agricultural field, are most probably due to the use of fertilisers and inadequate agricultural practices.

Moreover the sampling shows that the municipality well that is tapping the Sannine aquifer exhibits values of chlorides that exceed the maximum admissible value for domestic purposes. Furthermore a well that has been drilled down to 500 m in Dhour As Sarafand was abandoned because it had penetrated the salt water wedge. As for the Eocene aquifer, there is no clear evidence of saltwater intrusion from the sampling however some wells in the village pump brackish water from the Eocene aquifer.

**Table 20: Water quality results for Sarafand samples**

| Sample ID | TDS (mg/L) | Chlorides (mg/L) | Nitrates (mg/L) | O-Phosphates (mg/L) | Faecal Coliforms (CFU/ 100 mL) |
|---|---|---|---|---|---|
| S1 | 553 | 82 | 82 | 0.29 | 0 |
| S2 | 453 | 77 | 67 | 0.20 | 2.7 |
| S3 | 377 | 50 | 7 | 0.28 | 0 |
| S4 | 435 | 80 | 35 | 0.38 | 4 |
| S5 | 532 | 78 | 64 | 0.22 | 17 |
| S6 | 304 | 31 | 17 | 0.15 | 0 |
| S7 | 313 | 33 | 18 | 0.18 | 0 |
| S8 | 630 | 207 | 5.4 | 0.32 | 0 |
| Guidance Value[a] | | 25 | 25 | 0.40 | 0 |
| Maximum Admissible Value [a] | 500 | 200 | 50 | 5.00 | 0 (domestic) 200 (irrigation) |

[a] *All values according to Ministerial Decision 52/1 issued by the MoE, except for TDS where EPA standards are included and faecal coliforms where EPA standards for irrigation are used.*

## Water Resources Management in Naqoura

### Legal and Institutional Frameworks in Naqoura

Naqoura used to fall under the jurisdiction of Tyre Water Authority in terms of potable water but after the emergence of the New Water Law it has become part of the newly established South Lebanon Water and Waste Water Establishment (SLWWE). Even though the new water law states that these new establishments are responsible for domestic, irrigation and waste water issues, the new establishment will manage domestic and waste water issues only, since the LRA is already responsible for irrigation projects in the South region (Nizam A., 2003).

The SLWWE has not yet assumed its responsibilities in Naquoura. The Municipality is currently managing water related issues and operates a well located within its municipal boundaries and connected to the majority of house units in the municipality. During the discussions held during the participatory workshop in Naqoura, it was revealed that the MoEW is initiating a dam project on the Hamoul River; disagreement was brought up concerning the responsible body that should manage the project after completion, whether the LRA or the Municipality. The institutional set-up for water resources management needs to be put in place.

*Water supply in Naqoura*

*Groundwater in Naqoura*

The major water source in Naqoura is groundwater. The aquifer exploited is the Sannine Aquifer. This aquifer is in direct contact with the sea. However, the nature of the Sannine Aquifer, having a relatively impermeable layer separating two water-bearing zones, resulted in the protection of the lower water-bearing unit from saltwater intrusion.

Groundwater in Naqoura is being exploited through wells and springs. Two clusters of wells exist in the Naqoura area. One cluster is present in the village and the other is in Hamoul valley. Approximately 62 wells were surveyed, 17 of which are not in use.

**Table 21: Results of well survey in Naqoura**

| Type | Use | Aquifer Tapped | No. of wells with known pump discharge | No. of Wells with unknown pump discharge | Total wells | Average pump discharge ($m^3$/day) | Volume exploited ($Mm^3$/year) | |
|---|---|---|---|---|---|---|---|---|
| | | | | | | | Low | High |
| Public | Domestic | Sannine | 1 | - | 1 | 3456 | 0.42 | 0.63 |
| Private | Domestic | Sannine | 1 | 0 | 1 | 604 | 0.04 | 0.05 |
| | | Sannine | 5 | 1 | 10 | 293 | 0.02 | 0.04 |
| | Irrigation | Sannine | 29 | 8 | 37 | 1396 | 1.30 | 2.60 |
| **Total No. of wells and the total yearly discharge** | | | | | **45** | | **1.78** | **3.33** |

*Note: 17 wells are out of use*

Wells not in use are either contaminated by saltwater or not equipped. Moreover many wells are abandoned since the municipality well is providing enough water for all the housing units. The remaining wells are private and are mainly used for irrigation purposes, yet few are used for domestic purposes. The estimated total volume of groundwater being exploited from wells in the Naqoura area ranges from 1.8 to 3.3 $Mm^3$/year.

**Photo 36:**
**Private well used for irrigation**

Four main springs, namely Hamoul, Iskandarouna, Labbouneh and Al Ain are present in the Naqoura area. Hamoul and Iskandarouna springs are being used for irrigation and their estimated yield is approximately 3,000-3,450 $m^3$/day and 2,000-2,595 $m^3$/day, respectively.

The El Ain spring is being used by part of the village for domestic purposes and its discharge is approximately 100-172 $m^3$/day. Labbouneh spring was not visited because of its location in a military zone. All of those springs discharge from the Sannine Aquifer. Several submarine springs with unknown discharge are also present along the coast of Naqoura.

*Water supply infrastructure in Naqoura*

The municipality well, which has a maximum discharge of 3,456 $m^3$/day, pumps for 8 to 12 hours in summer providing about 1010 $m^3$/day, and pumps for 2 to 4 hours during winter providing 865 $m^3$/day. The fee of subscription to the main water supply system is 10,000 Lbps per month. All houses in Naqoura are connected to the main water supply network, except for houses located uphill at the end of the village, and some parts of the coast starting from Hamoul section northward.

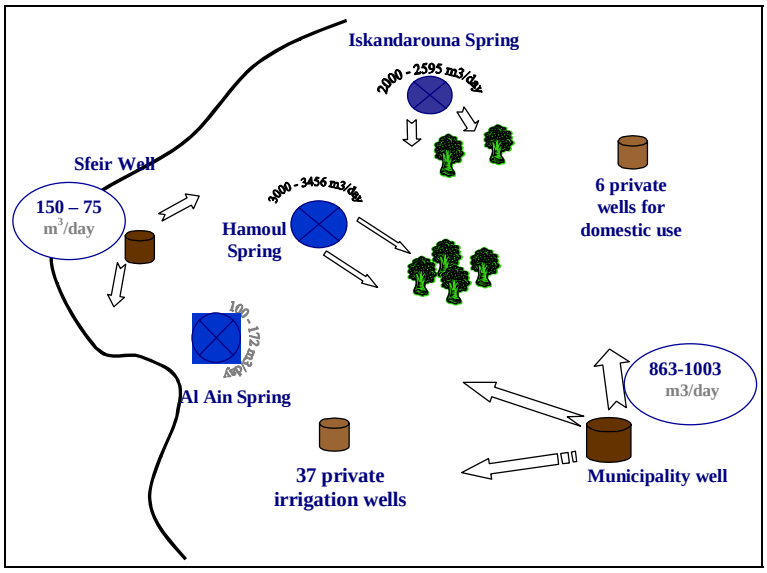



**Figure 13:**
**Illustration of water supply infrastructure in Naqoura**

The second source of water is Sfeir Private Well, located at the coast, which provides mostly the houses and shops along the coast and the UN units with 150 $m^3$/day in summer time, and with 75 $m^3$/day of water in winter time. Approximately 200 housing units are subscribed to this service. There is a committee from Naqoura responsible for monitoring and operating the well.

Some of the habitants also exploits two major springs in the area, namely Nabaa El Ain and Iskandarouna. Nabaa El Ain is a spring located in Al Ain Valley; it supplies water to all the neighbouring houses (5 houses). It has a daily discharge of 172 $m^3$/day. Nabaa el Iskandaruna is located in the northern part of Naqoura near the Coast. It provides 7 $m^3$/day for a house of 8 persons. There are also six private wells located throughout Naqoura that are used either because of dissatisfaction with the quality of the municipality well, or because operation of the private well is cheaper than the subscription to the main water supply service. It is worth mentioning that the wells pump water using fuel operating motors rather than electricity operating motors, since electricity is not always available.

As for irrigation water supply, land owners use private wells or springs that are located in or next to their lands, namely Iskandarouna and Hamoul springs. Iskandarouna spring provides 2595 $m^3$/day for a 6-month period. It is used to irrigate using the trickle technique 600,000 $m^2$ of banana fields. Hamoul Spring has a maximum yield of 3456 $m^3$/day. It is used to irrigate lands located in the valley. Also, 37 Private irrigation wells are scattered throughout Naqoura village, especially in Hamoul area, El Khalle, Aalaibat, Ech choumara, and Labbouneh. These private wells have discharge rates ranging between 1100 and 1300 $m^3$/day. They all pump an average of 5400-6600 $m^3$/day of water per season.

*Water demand in Naqoura*

*Domestic water demand in Naqoura*

Field surveys have been performed for approximately 220 housing units. An estimate for water consumption per capita per day for summer and winter time was calculated. Water consumption for winter time averaged 122 L/capita/day while it averaged at 204 L/capita/day during summer. These values are close to the consumption recommended by the UNDP (150L/cap/day).

*Agriculture water demand in Naqoura*

In order to estimate irrigation water consumption from private wells and springs in Naqoura, 770,000 $m^2$ of agricultural lands were surveyed. Actual irrigation water consumption was calculated based on the discharge of the spring or well for each mode of irrigation. The actual consumption exceeds theoretical crop demand by no more than 20%, which is a rather good result. This value is actually within the margin of error in the estimations, but needs to be confirmed by future monitoring of irrigation water consumption.

*Water quality in Naqoura*

While no major signs of pollution were yet identified, indication of potential pollution or water quality deterioration was found:

- Although faecal coliforms were not encountered in the wells, tap water, or even spring samples, minor contamination in Iskandarouna spring was detected; hence, while the level of sewage pollution is still not alarming, despite the lack of wastewater treatment, the situation call for the immediate protection of the rich water resources in the area.
- Possible saltwater intrusion was detected in one sample; one well located in El Khalle (200 m deep), tapping the first layer of the Sannine aquifer showed high value of TDS and Chlorides exceeding maximum admissible values; the first layer of the Sannine Aquifer could be affected by salt water intrusion especially that it is in direct contact with seawater; as for the municipality well (375 m deep), it is taping the third layer of the Sannine aquifer, which is protected from salt water intrusion from an overlying impermeable layer.

## IWRM in the Municipality of Damour

An IWRM plan stretches beyond the limits of a municipality, and comprises elements such as fiscal incentives or legal and institutional measures that can not be decided by the municipality alone, especially given the institutional/legal set-up in the country. The recommendations presented in this section should facilitate the transition towards a better water management system in the municipality, which incorporates some practical elements of an IWRM strategy. The section first presents the SWOT analysis for water management at the municipality before providing recommendations for improved water protection and management.

*Strengthening monitoring capabilities*

The proposed monitoring activities would present several benefits to the municipality of Damour in terms of water resources management:

- Generation of actual data concerning the upstream utilisation and potential pollution of the Damour River that could be used by the Damour municipality in future negotiations with upstream users with respect to the Damour river water rights based on a basin-wide water allocation scheme;
- Increased co-ordination with the concerned water authorities with respect to the exploitation of the area's groundwater;
- Setting the framework to monitor water losses in the networks and to reform the water pricing structure to encourage water savings.

*Conflict resolution*

Two major conflicts among water users exist in the area involving:

- Beirut Water Authority and Damour municipality; and
- Damour municipality and upstream users of Damour river.

*Water quality protection*

Four major sources of water pollution predominate in Damour:

- overexploitation of the aquifer leading to seawater intrusion;
- upstream violations leading to river pollution;
- agricultural practices; and
- lack of a complete sewer network and wastewater treatment plant.

The first two sources of water quality deterioration originate from outside the boundaries of the Damour municipality, and should be dealt with based on the previous recommendations, which focus on water quality monitoring, improved co-ordination, and the formation of a River Basin Committee.

The key towards minimising water pollution from agriculture practices is to inform and train the farmers on best management practices (BMP) related to the use and application of agro-chemicals, their timing and quantities. Since Damour hosts one of the major remaining coastal agricultural plains, it could set-up a regional information centre for farmers to obtain data on BMPs. This could be done also in collaboration with academic institutions, the MoE, the MoA as sources of information and technical support.

The issue of domestic wastewater treatment is very important and should be given a high priority by the municipality. Disposal of untreated sewage is further threatening both groundwater and surface water in the area. The Damour sewage network should be connected to one of the planned coastal wastewater treatment plants in the National Management Plan for wastewater. Municipalities should have a more proactive approach towards the problem and should not simply wait for the government to secure funds and execute the projects, which is a process that is typically taking very long. The Damour municipality should constantly seek for updated information from the government and show the importance the municipality has set for the problem.

Several municipalities in the country have already taken the initiative, and with the assistance of international donors (USAID, USDA, EC), have implemented rural-based wastewater treatment plants. This could eventually be an option for Damour. In this case however, the sustainability of the projects needs to be assessed at the early stages of project concept and implementation. The municipality should be aware from the beginning of the operation and maintenance requirements of the plant, and should be able to secure the resources needed to operate the plant.

*Community participation*

The local community in Damour should become more involved in the water-related activities of the municipality. It is important first that the community builds a sense of identity, pride, accomplishment and ownership so that the local residents get more involved in the management of natural resources.

The community can help in many aspects such as:

- Awareness on the importance of placing water meter devices to monitor water consumption and losses;
- Awareness of water conservation needs and methods;
- Organising the establishment of the information centre for agricultural practices, which could be expanded to cover other water / environment-related topics;
- Promotion of the formation of a water basin committee for the management of the basin's water resources and monitoring of environmental violation;

- Follow-up on the wastewater treatment issue (identification of sources of funds, treatment technologies);
- Encouraging co-ordination of the municipality with the BWA;
- Assisting in conflict resolution.

## IWRM in the Municipality of Sarafand

The recommendations are classified in four major categories:

- water monitoring;
- water quality protection;
- conflict resolution; and
- community participation.

*Strengthening monitoring capabilities*

Water monitoring needs in Sarafand can be grouped into three categories:

- monitoring water consumption;
- monitoring water quality; and
- monitoring private wells.

*Water quality protection*

Water quality protection measures should focus on the following areas:

- stopping pollution from domestic sewage;
- minimising pollution from agricultural practices; and
- controlling pumping from groundwater.

*Conflict resolution*

Two major conflicts related to water use were identified in the Sarafand area involving:

- Nabaa Tasseh Water Authority and local residents; and
- LRA and local farmers.

As such, the existing conflicts are of the type supplier-user, whereby the user faces a problem regarding the existing water service.

*Community participation*

The local community in Sarafand should become more involved in the water-related activities of the municipality. It is important first that the community builds a sense of identity, pride, accomplishment and ownership so that the local residents get more involved in the management of natural resources. The community can help in many aspects such as:

- awareness on the importance of placing water meter devices to monitor water consumption and losses;
- awareness on water conservation needs and methods;
- follow-up water protection and monitoring activities; for instance, the committee would ensure that sewage is diverted from Bou Daynan Spring;
- organising the establishment of an information centre for agricultural practices, which could be expanded to cover other water / environment-related topics;

- follow-up on the wastewater treatment issue (identification of sources of funds, treatment technologies);
- assisting in conflict resolution.

## IWRM in the Municipality of Naqoura

The recommendations are classified in four major categories:

- institutional set-up;
- water monitoring;
- water quality protection; and
- community participation.

*Institutional set-up*

The institutional set-up with respect to the management of the water resources in Naqoura is not yet fully operational. This is mainly due to the relatively recent formation of the municipality and the long period of military occupation in the area. This has led to the multiplication of the sources of water used in the area and the non-controlled exploitation of the aquifer for both domestic and irrigation uses.

*Strengthening monitoring capabilities*

It is essential that the Naqoura municipality strengthen its water resources monitoring capabilities. Pressing monitoring needs are in the areas of:

- water consumption;
- water quality;
- losses in canalisation; and
- private wells.

*Water quality protection*

The Naqoura municipality should take advantage from the still limited level of development in the area, and therefore the limited number of sources of pollution to promote a fully preventive approach towards water quality protection. This preventive approach should be based on the following major pillars:

- construction and operation of a domestic wastewater treatment plant;
- careful examination of every proposed activity in the area using tools such as EIA; and
- conducting a comprehensive environmental awareness campaign in the area.

*Community participation*

The local community in Naqoura should become more involved in the water-related activities of the municipality. It is important first that the community builds a sense of identity, pride, accomplishment and ownership so that the local residents get more involved in the management of natural resources. The community can help in many aspects such as:

- awareness on the importance of placing water meter devices to monitor water consumption and losses;
- awareness on water conservation needs and methods;
- awareness in schools;
- follow-up on the wastewater treatment issue (especially the sustainability issues);

- promoting environmental protection in the area in general;
- co-ordinate with the municipality on issues related to water resources and environmental protection.

## Conclusions

Water resources management in Lebanon faces difficulties at all levels, including institutional, legal and technical levels. At the institutional level, several institutions are involved in water resources management, but yet, the responsibilities of these institutions many times overlap, leading to the lack of proper implementation of their mandates. These include primarily the Ministry of Energy and Water (MoEW), the newly established water and wastewater establishments, the Council for Development and Reconstruction (CDR), the Ministry of Environment (MoE), the Ministry of Public Health (MoPH), and the Ministry of Public Works and Transport (MoPWT). In addition, the regional water and wastewater establishments are based on jurisdiction boundaries rather than watersheds, and do not facilitate the implementation of IWRM principles, which advocate a participatory approach to water management among common water users and competing uses. A formal participatory mechanism does not exist.

The legal framework for water resources management also needs review, consolidation and updating to allow for a better and more efficient distribution and allocation of water resources. Numerous duplications and gaps in the responsibilities of the different institutions and stakeholders of the water management sector are still prevailing. There is no comprehensive legal framework for water resources management that clearly identifies the roles of the different stakeholders and overall strategy for sustainable water management.

At the technical level, water supply infrastructure is relatively old, inadequately maintained, hence leading to water losses most of the times in excess of 50%; skilled staff is not readily available; monitoring activities are almost non existent; water and particularly wastewater treatment plants are insufficient, leading to surface and groundwater pollution; and incentives as well as awareness towards more efficient use of the water resources (domestic, agriculture and industrial) are almost totally missing. For instance, water pricing structures still based on lump sum values that do not reflect the true value of water, favour water losses and abuse.

In this context, local communities in Lebanon have an important role to play. These communities are called to act in a proactive way in managing their water resources, in close co-ordination with the relevant authorities. Such a proactive attitude can be promoted through the increase of local awareness with respect to the problems related to water resources and environment in general.

The added-value of the CAMP project lies in its inherent participatory approach and the work in three pilot municipalities, rather than a general assessment of water resources management in the country or a specific region. Lebanese municipalities can have a significant role to play in the protection and management of natural resources, as long as they are provided with the opportunity of learning and understanding their value and importance.

## Recommendations

- At the National Level:
  - *D*raft the “Water Code”, clearly defining the responsibilities of the different institutions / agencies having a role in water management, eliminating gaps and duplications in existing legislation, and promoting principles of IWRM;

accompanying necessary application decrees are also prepared to ensure enforcement of the legal framework;
    - Mechanisms to finance water management activities, in particular with the introduction of the water pricing policy reform, and eventually through privatisation of water services, should be put in place.
- At the Regional Level
    - At the river basin levels or catchment zones (to be identified and decided upon), regional master plans should be prepared clearly identifying water supply options, water needs, sources of pollution, future requirements, and assessing options to meet these requirements, not only through water supply management, but also working on the demand side management, and with concrete actions to protect water quality; transboundary issues should be considered, especially given the karstic nature of the Lebanese major aquifers; best option should consider environmental, social and economic conditions, in line with the principles of sustainable development and strategic environmental assessment;
    - The capacity of water authorities staff should be improved to strengthen the human resources in different issues related to water management;
    - Participatory mechanisms should be created to assist in the implementation of the regional master plans; this should be done in close relation with the established Water Code, according to the set responsibilities of each stakeholder; a participatory mechanism should allow the involvement of the major stakeholders and water users in the management of the water resources;
    - Specific measures should be identified to mitigate the salt water intrusion in coastal aquifers; for instance, a mechanism to stop illegal pumping should be put in place.
- At the Local Level
    - Awareness of local communities of importance of water conservation and protection should be raised; the participatory mechanism formed at the regional level could help build such awareness;
    - The role of local communities in water resources management should be emphasised, so that these become committed and encouraged to actively participate in the promotion of sustainable water management;
    - Local committees could be created to deal with localised water issues, build local awareness, and build partnerships and co-ordination with other stakeholders.

These very specific recommendations, if implemented, will set-up the necessary framework for sustainable water resources management, since the legal, institutional, and human aspects (capacity building and awareness) of water management will be strengthened, and these the foundations for the identification and implementation of all other activities in the medium and long-term horizons.

# Environment, Agriculture & Fishery Sector

## Objectives of the Report

The overall objectives of the study are to:

- Generate a diagnostic analysis of the environment and agriculture and fishery sector for utilisation in support of integrated coastal zone management;
- Enable the development of strategies and procedures for the rational exploitation of agricultural and fishery resources within the framework of sustainable development;
- Integrate environmental protection into decision making on all levels, and especially integrate environmental concerns into local agricultural policies;
- Disseminate information and exchange experience related to agriculture and fishery;
- Increase public participation in local decision-making process.

**Photo 37:**
**PRA Workshop in Naqoura**

## Environment in CAMP Area

The Lebanese coastal area, which constitutes around 8% of the total area of the country, comprises 33% of the total built-up area in the country and hosts 55% of the total population (Dar Al-Handasa & IAURIF, 2003). The high concentration of the population within the narrow coastal strip imposes a stress on the natural environment and its resources.

*Marine environment*

Waves along the Lebanese coast are characterised by weak amplitude and short wavelength. Sediments of the upper continental shelf of Lebanon are composed mainly of sand, sandy silt, silt and clayey silt. The long-shore currents that move in a south-north direction influence the transport and distribution of sediments. The currents circulate in a clockwise direction near the surface, thus sweeping sediments towards the Lebanese coast from the southwest. Water salinity varies directly with temperature and ranges between 34 and 39 per thousands, with an average of 38 per thousands (Laceco report, June 2000).

**Table 22: Fauna found in the Lebanese marine environment (source: Lakkis, 1996)**

| Marine fauna | Description |
|---|---|
| Ichtyofauna | Some 325 species of fish have been identified in the Lebanese water, of which 28 originate from the Red Sea. Of those 325 species, 281 are bony, and 43 are cartilaginous. |
| Crustaceans | A total of 404 species of crustaceans reported in Lebanese waters, 16 species of which are crabs and the remaining are species of shrimps and crayfish. Sand dredging operations particularly affect the distribution and abundance of these species. |
| Molluscs | 354 species of molluscs that exist in Lebanon. Six species of cephalopods have been identified, with cuttlefish, sepia, and octopus being the most common and commercially exploited. Gastropods and bivalves are also common but have no commercial value. |
| Echinoderms | Several species of sea urchins and sea cucumbers exist usually on soft limestone and sandstone. |
| Porifera | Some 21 species of sponges have been identified in the Lebanese waters, and their fishing has been long established in the Lebanese tradition particularly in the Sarafand area, namely Spongia officinalis and Hippospongia equina. These sponges live on rocky bottoms and have been exploited for commercial purposes. |

The marine fauna of Lebanon, typically in CAMP area, is diversified and is divided into several categories, which in turn are subdivided into a large number of species.

The Lebanese coastal environment is rich in flora and contains some 597 species. These species are divided into phytoplankton and algae.

**Table 23: List of marine floral species (source: Lakkis, 1996)**

| Type | Number | Description |
|---|---|---|
| Phytoplankton | 389 | Diatoms, Dinoflagellates, Silicoflagellates, Ebdriidae |
| Algae | 208 | Cyanophytes, Chlorophytes, Lechens,Phaeophytes, Rhodophytes, Xanthophytes |

A number of rare and endangered species were identified in the Lebanese waters of which 16 species of algae, sponges and molluscs require protection and 377 species of algae, phytoplankton, zooplankton and fish are rare. Other species are of commercial value and economical importance. Table 3 shows the marine species that are of commercial value in the Lebanese waters.

Loggerhead *(Caretta Caretta)* and Leatherback sea turtle species nesting in the Mediterranean have been recorded in Lebanon. The Loggerhead is more abundant with nesting observed mostly in June, while hatching occurs in early August. Several confirmed nesting sites are located on the sandy beaches of the Palm islands Nature Reserve and the Sour Coastal Nature Reserve. Unfortunately, sea turtles are commonly caught by fishermen, often as incidental by-catch, and usually killed. Also, many nesting beaches have been reduced in size or have become unsuitable due to the increasing use of coastal areas development and tourism, or the degradation of marine habitats by pollution. (RAC-SPA 2001).

**Table 24: Marine species of commercial value (source: Lakkis, 1996)**

| Type | Species number | Scientific name |
|---|---|---|
| Algae | 1 | Pterocladiella capillacea |
| Porifera | 2 | Spongia officinalis, Hippospongia equina |
| Molluscs | 4 | Pinctada radiata, Charonia lampas, Octopus vulgaris, Sepia officinalis |
| Crustacean | 3 | Portunus pelagicus, Maja squinado, Scyllarides latus |
| Echinoderm | 1 | Paracentrotus lividus |
| Ichtyofauna | 50 | Not available |

**Photo 38:**
**Female turtle laying eggs in the reserve (Sour)**

Finally, the Lebanese coast has witnessed over the past 25 years illegal activities, such as sand extraction and dredging from the shore and sea bottom, on one hand, and backfilling for marina construction and land reclamation, on the other hand. These activities degrade the coastal wetlands due to changes in hydrological conditions and result in the death of seawater micro-organisms and the destruction of natural breeding and nesting habitats.

**Recommendations:**

- **Enforce the existing laws through compliance monitoring and control.**
- **Promulgate new needed laws and undertake awareness campaigns to reduce illegal actions taken against nature (e.g., preserving nesting areas, prohibiting sand dredging, regulating fishing activities, …).**

*Coastal pollution*

Untreated domestic, commercial and industrial wastewater discharged into the marine environment is contaminating seawater, sediments, and marine flora and fauna with all kinds of biological (e.g., faecal matter containing pathogen), chemical (e.g., organic and inorganic contaminants) and physical matter (e.g., sludge). The contaminants present in the coastal waters and sediments along the CAMP area were identified in a series of samples collected and analysed by the AUB water resources centre.

Other potential sources of marine water pollution include the bulk fuel storage facilities along the shore. Pollution from vessels (intentional and unintentional discharges) and accidental spills from tankers (fuel or other chemicals) have been reported. For example, the wastewater generated during tanker cleaning is also purposely washed-off over board, creating oil slicks that settle on the shore. It is to be noted that international and regional treaties and conventions ban such practices.

**Table 25: Biological contamination of coastal waters in the CAMP area (source: CDR report on coastal pollution and water supply project: preparation of an environmental monitoring plan (Laceco))**

| Sample location | $BOD_5$ (mg/l) | Faecal coliform (CFU/100ml) | Total coliform (CFU/100ml) |
|---|---|---|---|
| Chouf | 11.60 | 0 | 2 |
| Saida | 4.00 | 200 | 3200 |
| Saida | 6.80 | 2 | 2 |
| Nabatieh | 8.20 | 72 | 118 |
| Sour | 20.33 | 440 | 1144 |

**Table 26: Chemical contamination of the CAMP area coastal waters. (source: CDR report Coastal Pollution and Water Supply Project – Preparation of an Environmental Monitoring Plan – Laceco-Safege-Safege Ceitis)**

| Location | Type of sample | Contaminants | Comments |
|---|---|---|---|
| Saida | Marine sample | Cr, V, Zn, Pb, Ni, Hg, Ba, dichlorobenzene, alkylated benzenes, DEHP, PAHs, alkylated phenols | Samples collected from sewage and industrial outfalls along the coast between Saida and South Beirut. |
| Ghazieh Industrial zone | Marine sample | Zn, Cu, Pb, Ba, alkylated PAHs, alkylated benzenes, aliphatic hydrocarbons, 2(methilthio), benzothiazole, octyl phenol, 4,1-methylpropyl phenol | Sewage and industrial outfalls discharging directly into the beach. |
| Sour | Sediment sample | Zn, Cu, Pb, Hg, alkylated PAHs, Phenolic compounds, M-dichlorobenzene, alkylated benzenes. | Sediments collected from the harbor in front of the main sewage outfall. |

An increased level of organic and inorganic nutrients is leading to eutrophication of shallow protected areas near the shore, which is manifested by high degree of algal growth. Deterioration of seawater quality in terms of increased turbidity, coloration, odours, and other visual aesthetic criteria are affecting amenities of local residents and tourists.

**Photo 39:**
**Industry along the coastline;**
**Petroleum bulk terminal and power-generating plant in Jiyeh**

*Nature reserves*

The Tyre Beach Reserve is the sole marine coastal reserve within the CAMP area and is located south of the city of Sour (Tyre). The reserve is one of the few remaining sandy beaches in Lebanon, and is an important nesting site for sea turtles. It harbours significant biological diversity, possibly given the proximity of the freshwater springs to the sea. This reserve acquired legal status in 1998 under Law #708/98.

However, similarly to the Sour coast, there are some other natural zones (which are not yet totally deteriorated by human actions) along the coast of the CAMP area that is worth preserving. Some of these zones include:

- The coastal strip of Damour and Saadiyat;
- The coastal strip of Jieh;
- The coastal strip of El Rmaileh;
- The northern coastal strip of Saida;
- The coastal strip between Ras el Ain and Naquoura.

**Recommendations**:

- **Preserve the little of what remains of the Lebanese coast by classifying them as "viable" natural reserves. Thus, it seems of utmost importance to undertake a "chain" process for the preservation of the above-mentioned coastal strips.**
- **Ensure the sustainability of all natural reserves. Thus, it is important to ensure the conservation of the declared natural reserves via creating socio-economic incentives, and undertaking continuous monitoring and law enforcement.**

*Forests*

According to official published maps, like the Forest Maps of Lebanon prepared under FAO (since the 1965), the two main types of forests present in CAMP area include: 1) the *Pinus brutia* (pine) forest with less than 10% density, with a mixture of *Cupressus sempervirens* and understorey of *Q. calliprinos, Q. infectoria* and their associated species; and 2) the Oak woodland, also with less than 10% density, with trees ranging from 1-4 m in height with abundant maquis spp. According to the authors, no zones were classified as "Forest", instead there were areas classified as homogeneous zones with specific dominant tree type. The homogeneous zones with degraded trees (especially *Quercus spp.)* were classified as Scrubland.

*Water Supply*

Four major perennial streams / rivers and two minor streams discharge their flows into the Mediterranean Sea along the CAMP area. These include the rivers of Damour, Awali, Zahrani and Litani, and the streams of Sainiq and Abou el Assouad. Similar to other rivers and streams in Lebanon, these rivers reach their peak flow during March and April, while they have minimum flows during the months of September and October. Water from the perennial streams running across the CAMP area is generally used for irrigation of agricultural plains. In Sour, irrigation water is abundant through the Qassmieh-Ras El-Ain irrigation project, however due to the use of inefficient furrow irrigation, this water is wasted. In Ghazieh, the destruction of the siphon on the Zahrani by the Israelis resulted in drilling of haphazard artesian wells, leading to over exploitation of the coastal aquifer and resulting in seawater intrusion into the water table. In addition, the extensive and excessive pumping of groundwater is causing a steady decline in the groundwater level.

Four potable water treatment plants existed before the war in the South of Lebanon and were rehabilitated or expanded during the past ten years. Table 4.12 shows the distribution and flow capacity of the water treatment plants serving, among others, the CAMP area.

**Recommendation**:

**On the short to medium-term, there is an urgent need to monitor the coastal aquifers on a quantitative and qualitative basis and regulate their use, via a joint co-ordinated effort undertaken by the MoE, MEW, Water Authority, LRA, CDR, etc. to prevent their potential contamination by salt water intrusion.**

**In addition, the following actions are proposed:**

- **Prevent the connection of households to an existing wastewater network in the absence of an operational wastewater treatment plant.**
- **Encourage the rehabilitation of all existing cesspools and septic tanks and their upgrading into a well designed operational septic tank.**
- **Undertake an awareness campaign to encourage people in considering water as a valuable resource in view of reducing its consumption.**

**On the long-term, the water supply issue in Lebanon in general, and in the coastal zone in particular, has to be dealt with at the national level, by the MoE, MEW and the Litani River Authority, on the basis of a "watershed" or "river-basin" approach.**

*Water quality*

The principal causes of water pollution in the South are the inadequacy of wastewater treatment, pollution caused by waste released from industries and hospitals, inappropriate location of seepage pits and septic systems, inadequate collection and treatment of solid waste along the coast, deforestation, and excessive usage of fertilisers and pesticides.

Surface water quality data are not readily available in Lebanon. They are available through sporadic sampling activities conducted by various institutions and research centres. In November 1999, a study conducted by the AUB Water Resources Centre assessed the impact of waste disposal on water quality in nine major rivers in Lebanon, two of which: Damour and Awali Rivers, are part of the CAMP area.

**Table 27: Water quality laboratory analysis for Ghadir, Damour and Awali rivers (source: CDR report coastal pollution and water supply project: preparation of an environmental monitoring plan)**

| Parameter (mg/l) | Damour | Awali | Lebanese standards |
|---|---|---|---|
| PH | 8.2 | | 6.5-8.5 |
| BOD | 10 | 3.7 | 5 |
| COD | 19.6 | | - |
| TSS | 60 | | 30 |
| TDS | 266 | | - |
| Lead | ND | | 0.02 |
| Mercury | 40 | | 1000 |

The presence of quarries and other associated industrial activities (e.g., tile manufacturing…) upstream along a watercourse has a direct impact in increasing the levels of solids (TSS and TDS) in the water downstream, thus affecting the quality and possible utilisation of the water for agricultural or industrial purpose.

**Recommendation:**

**The preservation of the surface water quality (and quantity) shall be based on a "watershed" or "river-basin" approach.**

**Photo 40:**
**Quarry and cement factory in Sibline**

*Groundwater quality*

In the same study conducted by the AUB water resources centre mentioned previously, 31 groundwater samples were tested to determine whether seawater is intruding the groundwater table. Out of these 31 samples, 6 of the tested samples were taken from wells in the CAMP area: Jiyeh (3 wells) and Rmeyleh (3 wells). The results showed that the levels of sodium and chlorides along these wells exceed the WHO and Lebanese standards and indicated a high level of seawater intrusion due to over pumping. In general the study found the following:

- Concentrations of pesticides detected inn groundwater were for the most part lower than the health advisory limits set by the USEPA.
- Nitrates and chloride concentrations were particularly high in coastal wells. This indicates the direct impact of agricultural practices:
  - excessive use of fertilisers (high concentrations of nitrates); and
  - over-pumping from coastal wells (high concentrations of chlorides → salt-water intrusion).
- Phosphorous, sulphate and heavy metals concentrations were within acceptable range.

**Recommendation:**

**On the short-term, there is an urgent need to undertake a comprehensive inventory of all existing wells in the coastal region to help preparing, at a later stage, a monitoring management plan for the coastal aquifers.**

Another potential source for groundwater pollution are the petroleum bulk terminals and tank farms located at and near the power generating plants, namely in Jiyeh (just to the south of Damour) and Ghazieh (immediately north of Sarafand). Some of the storage tanks have been taken out of service, though numerous ones are still being utilised. The following photo shows that some of the tanks are in need of physical rehabilitation, at least through coating.

**Recommendation:**

**Approach the fuel storage facilities (private and those belonging to the Electricity of Lebanon), complete an inventory of all tanks to assess their physical integrity and the threats they present to the public and the environment (leakage…).**

**On the other hand, it is recommended to empty all tanks not currently in service from any residual fuels.**

**Photo 41:**
**Decommissioned petroleum refinery in Zahrani**

*Wastewater*

None of the wastewater generated in the CAMP area is treated before being discharged into the environment. Dwellings within the CAMP area usually get rid of their wastewaters through septic tanks or seepage pits, or are connected to a sewerage network that discharge directly to the seashore or indirectly in storm water culverts, or overland into natural stream channels of dry bed.

Four major wastewater treatment plants are planned to service the CAMP area. These include the Ghadir, Nabi Younis (Jiyeh), Saida and Sour wastewater treatment plants. The treated effluents of these plants would be discharged by means of long sea outfalls. According to CDR, the length of each outfall would be or is designed to ensure that the treated effluents are discharged at a sufficient depth into the sea to ensure proper dilution and dispersion of mainly biological contaminants before returning back to the shore. Sludge generated from the treatment plants will be disposed of in accordance to the master plan for sludge management that is being prepared by the CDR.



**Photo 42, Photo 43, Photo 44: Outfalls and channels discharging wastewater directly into the sea in Sour**

*Solid waste*

The dilemma of solid waste is a national problem, and thus, shall be addressed as such. In that respect, and after more than ten years of debating, proposing and counter proposing different technical solutions and scenarios, the Council of Ministers took lately (in September 2003) a decision regarding that particular issue, namely:

- The country was divided into four regions, which are the agglomerations of the following mohafazats (*governorates)*: Beirut and Mount Lebanon; North and Akkar; South and Nabatiyeh; Bekaa and Baalbeck / Hermel.
- The CDR has to prepare the bidding document for specialised contractors to undertake the collection, treatment and landfilling of municipal, industrial, hospital, and slaughterhouse wastes, as well as, sludge resulting from some of the wastewater treatment plants.
- The government will provide the land needed for the construction of the waste treatment facilities, landfills and transfer stations.
- The municipalities accepting to implement any treatment facility in their jurisdictions are offered financial incentives (the mechanisms of which are not clear).
- The municipalities are encouraged to undertake solid waste collection.

Therefore, if the CDR will succeed in implementing the Council of Ministers' decision, it is expected that within the next two years the collection, transfer and treatment of solid waste

services will become operational, in a hopefully acceptable manner, on the totality of the Lebanese territory.

According to various studies, per capita waste production within the cities and towns of CAMP is approximately 0.70 kg per day. Available studies reveal that the major portion of the waste (around 55 to 60%) is organic due to the agricultural nature of the area and due to the local eating habits.

Generally, the waste is deposited in containers distributed all over the major residential streets and is then collected in compaction trucks by either the municipalities themselves or the private operator Sukleen (the waste collection contractor for Greater Beirut and its environs) for the area north of Saida / Awali River.

The waste collected from the area north of Awali River is then transported to the Aamrousiyeh sorting plant whereby waste is sorted into organic and non-organic fractions. The organic fraction is then sent to a composting plant whereby the organic material will be transformed to compost for use in agriculture, whereas the non-organic fraction is sorted for recyclable elements, then baled, and sent to the Naameh landfill for final disposal.

The waste collected south of the Awali River is disposed of in open dumps (like the ones in Saida, Sarafand, Sour and Naqoura). These dumps constitute a threat to the environment and to the groundwater table and must be closed and rehabilitated.

**Photo 45:**
**Solid waste, leachate next to banana plantation in area of Sour**

An EIA for the construction of a sanitary landfill for the disposal of the waste generated from the cazas of Sour, Saida, Jezzine, Nabatiye, Hasbaya and Bent Jbeil was prepared under the SWEMP-World Bank project. The proposed site is in the region of Zebqine-Henniye approximately 12 km south-east of Sour and 4.5 km from the main coastal road at an elevation of 200 meters. The total lifespan of the landfill is expected to last for 20 years. About 203 tons / day will be disposed of at the landfill as soon as operations start and will be able to receive 301 t / d of waste by the year 2020. The total area devoted to the landfill is 16-18 ha with an additional 20 ha available for further expansion.

Hospital waste generated from hospitals, clinics and health care centres in CAMP area are disposed with the municipal waste stream in open dump areas. The waste is a mix of risk and non-risk waste.

*Air quality*

Continuous measurement and monitoring of key air pollutants (particulate matter, $SO_2$, CO, lead) do not exist in Lebanon. Partial data are becoming available either from local continuous monitoring (Tripoli, Beirut international Airport) or from sporadic monitoring campaigns (in Beirut, Chekka, and along highways). Such data are not available for none of the cities of the CAMP area.

The major potential sources of air pollution in the CAMP area are the electrical power plants (namely Jiyeh and Zahrani) and traffic along the coastal road and the Beirut-South highway. The major greenhouse gases emitted from electric power generation include $CO_2$, $CH_4$, $N_2O$, $NO_x$, CO, VOC, and $SO_2$.

*Noise levels*

The major source of noise pollution in the CAMP area is believed to be the Beirut-south highway. However, such an impact is only noticeable in residential areas close to the highway.

**Agriculture in CAMP Area**

CAMP area is characterised by its typical coastal Mediterranean climate allowing for the production of most types of vegetables, field crops and most importantly several subtropical fruit trees such as citrus and banana.

The fertile soil and the presence of abundant surface water (and groundwater) source for irrigation further support the potential agricultural supremacy of the area.

**Photo 46**:
**Irrigation channel, Sarafand (Litani project)**

Almost all crop cultivation in the area is irrigated, with very few exceptions like olives at elevation slightly higher than sea level. Crop production is the most important agricultural sector in the area and is the main economic driver. Crops cultivated are mostly subtropical fruit trees such as citrus and banana and some vegetables.

Citrus occupies more than twice as much land than banana and so is the number of citrus planted plains. Among the most important citrus types cultivated are the sweet oranges, with the most important varieties being “Washington Nave”, “Valencia” and the local “Shamouti”. Due to the occurrence of the mal secco disease, the acreage of the lemons was reduced around 2 decades ago to be replaced by mandarin, grapefruit and pomelo (D’Onghia et al., 1998). If properly managed and maintained, citrus can produce up to 2.6- 4.0 tons per 1000$m^2$, whereas the price of the kilogram is 250 LL/Kg. On average each tree produces 5-7 boxes and each box 20 kg weighs. Each one 1.000$m^2$ contains 26-29 trees.

**Photo 47:**
**Oranges in Sarafand**

Although citrus is still among the important Lebanese export crops, growers have lost several of the traditional citrus export markets mostly due to the poor fruit quality produced (including the pesticide residue levels on fruits), the use of old varieties and the lack of a national market strategy. On the other hand the profitability of production is constrained by the declining yields due to the widespread of lethal and debilitating diseases and pests and the improper cultural practices and use of fertilisation. Additionally, citrus groves in the area are losing their once fertile topsoil due to the widespread practice of flood irrigation. Nowadays, the tendency is to replace the citrus orchards by banana plantation, as the latter provides, at present, a higher return.

**Recommendations**:

- **The MoA shall improve the practices of the citrus farmers regarding pesticide usage.**
- **The MoA shall assist the farmers in upgrading their irrigation techniques and shall review its agriculture agenda.**
- **The MoA shall monitor the replacement of the citrus orchard by banana plantation to inform the farmers about the medium to long-term risk of such an activity.**
- **IDAL shall keep on assisting the farmers via the "Export Plus" project and try opening the export market to Europe.**

Indeed, banana cultivation has expanded in the past years at the expense of citrus, which has faced important constraints since the outbreak of the war in Lebanon. Banana plantation in CAMP area is widespread and in most cases profitable. However, since banana in Lebanon is growing at sub-optimal environmental conditions, its productivity faces several constraints the most important of which are the losses due to low temperatures and wind, commonly encountered along the coast (LARS, 1996).

The native Lebanese species of banana is usually planted in open fields. Some farmers do grow banana in greenhouses. Generally speaking, greenhouse cultivation utilises more pesticides, fertilisers and water. Some banana greenhouses are being experimented along the coastal zone of the CAMP area.

**Recommendations:**

- **The MoA shall improve the practices of the banana farmers regarding the plantation and irrigation of the banana and the usage of fertilisers.**
- **The MoA shall, in co-ordination with the MoE, assess the environmental impact of existing and future agriculture projects in the CAMP area and ensure their monitoring.**
- **The MoA shall assist the farmers in upgrading their irrigation techniques.**
- **The MoA shall review its agriculture agenda and co-ordinate with the MIMA to control smuggling operations across the borders.**
- **The MoA shall monitor the replacement of the citrus orchard by banana plantation to inform the farmers about the medium to long-term risk of such an activity in order to maintain the profitability of both produce.**
- **IDAL shall keep on assisting the farmers via the "Export Plus" project and try opening the export market to Europe.**

Other subtropical fruits such as Annona spp., mangoes, avocado, and kiwi fruits have been introduced in several of CAMP area municipalities, like Damour and Sour. Though apparently profitable at an early stage, the cultivation of subtropical fruits is facing several serious constraints (LARS, 1996), the most important of which is the lack of knowledge among the farmers as to the necessary cultural practices (pollination, irrigation, harvesting…), the growth requirements and the resistance of the various introduced varieties of these crops to the local conditions (soil, environment and pests).

Commercial loquat orchards are still limited in the area, despite the widespread presence of the trees for household consumption. The production of loquats is commonly constrained by the high cost of production and labour, by the common occurrence of diseases, and by post harvesting problems especially due to the high perish of the fruits.

Vegetables and flowers of various types are often produced in CAMP area. Vegetables grown include primarily tomato, cucumber (mostly in plastic houses), strawberries (mostly in plastic tunnels), eggplant, pepper, beans, radish, and leafy vegetables such as lettuce. Flowers that are mostly produced in plastic houses are mainly gerberas and carnations.

Among the most important constraints of vegetable production identified by the local interviewed farmers is the poor knowledge of the proper agricultural practices and pest and disease control. The growers are faced with very high production input costs both for seeds or seedlings and for the intensive pesticide application. The latter in turns leads to unacceptable levels of pesticide residues on the fruits, especially with strawberries, cucumber and tomato reducing the fruit quality and market value. Another constraint is the limitation in the varieties used that usually floods the market during limited periods, thus resulting in lower prices, especially with the highly perishable crops such as strawberries.

**Recommendations:**

- **The MoA shall provide the farmers with the needed technical assistance to help them grow new types of plantation.**
- **The MoA shall, together with the MoE, provide the farmers with a second opinion regarding the usage of fertilisers, which is being vendor driven.**

*Livestock and poultry production*

Livestock production in CAMP area is less important and is limited to few large to medium-sized cattle farms with an intensive system, several medium sized poultry farms and some scattered presence of small ruminants (sheep and goats). The area does not include any farms of

small ruminants. Sheep and goats are found in limited numbers and are commonly fed through open-field grazing systems. Their numbers however, especially in the case of goats, have been greatly reduced in the past decades, especially in the region of Naqoura, which used to host large numbers of grazing animals from the various surrounding areas in its wild range- and woodlands.

The most important constraints facing the cattle farms, as per the observations of the interviewed farmers and key persons, are the high costs of health and veterinary services, the poor farm management due to poor technical knowledge and the low prices of milk. The latter is affected by the poor quality control regulations and the milk collection and storage facilities.

Limited information could be collected on the poultry production and constraints in CAMP area. However, the feed cost and the severe fluctuation in the market price of poultry meat and eggs has always been among the most critical constraints to the profitability of poultry production in Lebanon.

*Bee-keeping*

Bee-keeping has been traditionally practised within CAMP area, with honey, bee pollen and wax being major sources of income from bee-keeping. This activity is practised commonly as a secondary agricultural activity bringing additional sources of income to the household. Since bees are important sources of pollinators for the several fruit trees, the productivity of the orchards are known to increase when bee-hives are hosted in them. Due to the mild winter conditions in the CAMP area, bee-keepers from other regions in Lebanon with harsher winter conditions (Bekaa, and mountains) often transfer their hives to the CAMP areas for wintering, thus increasing the number of hives in this area during the winter season. Unofficial figures regarding the number of hives wintering along the coastline of Lebanon reveal that approximately 10,000 beehives are moved to the coastline from the inland areas such as the plains of the Bekaa and Mount Lebanon.

The main constraints facing bee keeping in the area are similar to those all over the country. These include diseases and pests attacking the bees (that according to a keeper are currently somehow under control) and the excessive use of pesticides within orchards that are harmful and lethal to bees.

**Fishery Sector in CAMP Area**

Fishing in Lebanon, and particularly in the CAMP area, is entirely the work of individual fishermen. Catches amount to 6,000 tons per year, 2/3 of which are due to fishing by lamplight. Around one thousand fishing boats are operational and used by 2,500 fishermen. The fishing equipment used is varied, but the main tools are the drag net, the trawl line, fishing lamps and the beach seine.

Fishermen go out to sea every day of the week and the average number of annual fishing days is around 300. 50% of the days are devoted to drag net fishing, 39% to the trawl line, 8% to lamp fishing and 8% to the seine. Drag net fishing is the most popular with local fishermen, but it is not the most efficient. Daily catches amount to only 8.3 kg. The best results are obtained by lamp-fishing which concentrates on young fish. Some 324 fish species have been identified in the Lebanese coastal waters, of which 28 originate form the Red Sea. 44 species are cartilaginous, belonging to 15 families, and 281 species are bony, belonging to 75 families. Only about 50 fish species are harvested for consumption purposes. A few species are slowly becoming less available, such as “daurade” and “belon”. Lebanese fishing is becoming a fringe activity because of the intensive over fishing of young fish. Analysis of the population dynamics

of pelagic and semi-pelagic fish has shown high death rates and very low average weights due to over-exploitation.

Fishermen based in CAMP area operate mainly out of Saida, Sarafand, Sour and to a lesser extent from Naqoura. The overall number of fishing boats remained unchanged since 1975. There is a belief that fish catches have dropped throughout the years too. Nowadays, fish catch ranges from 3,000-6,000 ton per year, where Sour constitutes 13% of this distribution and Saida 9%.

The 500 fishermen of Sour and Sarafand are grouped under one union possessing 215 small boats. Sour has 300 fishermen and about 170 boats, their production stands at about 175 tons of fish per year. Ninety percent of fishing activities are done over night for about 180 nights a year. The boats are generally between 8 to 10 meters and are well equipped. The ports protect the boats from the currents and contain the needed equipment expect the dock for unloading. The estimated income per fisherman is US $ 200 per month (ADR).

**Photo 48:**
**Fishermen fixing their fishing nets in the Saida port**

A noteworthy characteristic of these usually owner-operator small scale vessels are their low capital investment, efficiency of economic operation at low catch rates, and efficiency of directly satisfying a local market where fish sells at a premium; often without middlemen to extract rent from the primary sector. These features are of course countered by the lack of safety in operations, and difficulties of controlling and enumerating their performance.

**Photo 49:**
**The fishing port in Sour**

Due to the significant cultural importance and heritage, efforts have been directed towards protecting and preserving the fish stock. The fishing harbours and port are under rehabilitation to reach full capacity including, Saida harbour to reach 300 boats, Sarafand, 240 and Sour 500.

A noteworthy developmental project for fishermen is underway in Sour, namely the Housing Program for the Fishermen. The project, which will be completed in 2004, aims at providing housing for eighty families of the fishermen's community of Sour. This project is funded by the Spanish Agency for International Co-operation, with contributions from the " Al Baqaa " members and private donations and the Greek-Catholic Bishopric of Sour.

The main problems facing the fishery sector include:

- The continual discharge of wastewater into the sea;
- The risk of over-exploitation of the resources, especially through the illegal fishing practices (small mesh nets, dynamite, etc.);
- Wholesale fishmongers monopolise the purchase of the products brought in by fishermen;
- Outmoded equipment used by fisherman;
- Absence of hygiene in the handling of fish;
- Absence of social security;
- Improper co-ordination between unions of fishermen.

**Recommendations**:

- **Enforce the law and regulations regarding the fishing techniques (i.e., prohibit the use of dynamites; prohibit the use of nets with small mesh size…).**
- **Regulate the fishing activity.**
- **Assist the fishermen community.**

**Photo 50**:
**Baskets of fishing nets in Sour**

## Environment, Agriculture and Fishery in Damour

### Environment

The water resources in Damour consist of the Damour River, which water is used for agricultural needs, and the underground water, which is exploited by the various and many wells executed in the region for both agricultural and domestic usage. The principal polluting sources to the soil and groundwater in Damour include domestic wastewater, fertilisers and pesticides. Pollution to the Damour River has been studied recently. The polluting sources include:

- direct domestic, commercial (hospitals, gas stations, restaurants…) and industrial (liquid waste from olive presses, farms, quarries and stone cutting, concrete and asphalt…) wastewater discharges;
- runoff and irrigation return flow contaminated with fertilisers and other toxic chemicals used in agriculture;
- solid waste dumping in the river basin and directly into its channel;
- the untreated wastewater is probably the major polluting source to the Damour River and the groundwater resources in the area. Such pollution impacts directly on:
  - human health through proliferation of diseases caused by faecal, bacterial, viral, fungal infections, etc., either by direct consumption or via the food chain; and
  - river biodiversity.

Most dwellings in Damour have septic systems. The sludge generated by such systems is currently being hauled by cisterns and disposed off outside the city, mainly at the Ghadir plant. A wastewater network exists in Damour. However, the network is not operational. This network will be put into service following the construction of the main collectors that would route the wastewater, partly to Ghadir and partly to Ras Nabi Younes wastewater treatment plants. At present, the actual routing of the main collector is not yet identified.

As for solid waste, Damour is facing the same problems as any other Lebanese locality. But, since the area of Damour falls within the jurisdiction of the sole private operator in the area (Sukleen), the generated SW is being collected and treated away from the city.

The main source of noise and air pollution is the traffic along the Beirut-South highway. At present, actual data regarding the level of noise and air pollution do not exist.

The beach of Damour has endured over the past years the illegal actions of sand extraction. It was reported that the Damour shoreline narrowed around 25 m. This narrowing of the shoreline was noticed by comparing the cadastral maps of the 1940s with aerial photographs taken in 1994 and 1998 (Bakhos, 2003). Such illegal activities need to be sanctioned and stopped. Otherwise, any potential development of eco-tourism or environmental friendly projects along the coast will be negatively affected.

*Agriculture*

Agriculture is the main economic driver in Damour and is part of the identity and the "nationalism" of the Damour residents. The fields have a rich and thick topsoil cover, ample water for irrigation and enjoy gracious and suitable weather. Of approximately 11 million square meters of the total surface area of Damour, approximately a third (over 3.6 million square meters) is being cultivated. In the early 1990s, agriculture shifted strongly from citrus, which had replaced mulberry, to bananas that can start primarily producing within a relatively

short period of time (2 to 3 years). Recently, pressure had been mounting in relation to possible permitting of the construction of resorts within the soil rich agricultural plain. Such permitting would lead to the irreversible loss of productivity of the land, through the removal of the topsoil.

**Photo 51:**
**Agricultural plain of Damour (looking north)**

According to a 1982 report by FAO, the agricultural plain of Damour is one of the most important agricultural fields in the country as the mountains from the east and hills from the south protect it and is the last agricultural plain within the greater Beirut area. As indicated by historical accounts and interviewed farmers and traders that are operating in Damour, agriculture in Damour has over the ages sustained the community in produce and in profits. Actually, banana plantations occupy 16.7% of the total area of Damour (Bakhos, 2003) and around 65.3% of total cultivated area.

The main Damour valley is irrigated through two main aqueducts/channels that carry water from dams in the area where the Safa and the Hamam rivers meet to form the Damour River. The municipality is managing the agricultural file and regulates the allocation of irrigation waters, to the various agricultural plots. All owners of property within the Damour valley and plain have an inherent right to the waters of the Safa River. Although, there is abundance of water to irrigate the Damour fields even at times of low rainfall, inadequacy of supply has taken place and has been attributed to miss-management by the authorities and illegal practices up-stream from Damour. Recently, and with the water shortages of the past years, water that used to be the right of the community since many decades have been diverted to other areas. Unless properly addressed, this issue could become a constraint. Water rights and water-use efficiency is a critical issue that is continuously gaining importance and that should be resolved at the national level both from the policy and technical point of view.

Remnants still exist of a pine forest on a hill overlooking Damour village. According to town officials, that area is being reforested and approximately 6,000 pine trees were planted there, of which 600-700 trees have survived. Clear mixed woodland exist east and Southeast of Damour mainly along and upstream of the river valley.

*Fishery*

Although Damour lacks a fishing bay, almost ten households use the outlet of the Damour River into the sea as a site to place their fishing boats. The boats in Damour delta are vulnerable to winds and high tides. The fact mentioned above has restricted the practice of this profession in Damour. Some fishermen from Damour fish out of Saida and Beirut.

**Table 28: Municipality of Damour – general data**

| **General data** | |
|---|---|
| Population | 30,000 (officially) and 5,000 residences |
| Main Economic Driver | Agriculture |
| Health Services | 1 Clinic |
| Educational Services | 3 Schools (one public, two private through baccalaureate) |
| Priority of the municipality and surveyed members of the community | Preservation of Damour valley as an agriculture field<br>Protection of Damour river<br>Protection of the shoreline<br>Take possession for the collection of solid waste by the Municipality and halt the dependency on Sukleen |
| **Agriculture** | |
| Beekeeping | One farmer: Owns 40 beehives, mainly for household use. |
| Farms (Livestock) | Two (2) dairy farms, close to the Damour river channel: One with 70 cattle and one with 30 cattle (the larger one having state of the art equipment) |
| Crops | Banana mainly between highway and coastline<br>Vegetables mainly east of the highway<br>Citrus mainly in the Damour River valley<br>Some greenhouses<br>Experimenting with exotic fruits such as mango and avocado |
| Irrigation | Two main aqueducts / channels from dams in the area where the Safa and the Hamam rivers meet to form the Damour River |
| Soil | All quaternary. Calcaric fluvisols and Eutric fluvisols are dominant; also present is an association between Chromic luvisols in association with Calcic vertisols (Updated Soil Map of Lebanon, Darwish and Collaborators 2002) |
| **Industry** | |
| Industry | 10 light industry (shops) including wrought iron (welders), 1 cement block casting and numerous car mechanics |
| Gas Stations / Lube Oil and Car Mechanics | 5 gas stations, 3 of which offer car wash services and all offer oil change services<br>Oil is sold reused for 10$ / 200L<br>All have septic systems |
| **Tourism** | |
| Restaurants / Resorts | Two restaurants and two cafes are found along the Damour River |
| **Waste Management** | |
| Waste water | Wastewater is collected in septic tanks. The solids are emptied and disposed of in Ouzai (most probably at Ghadir)<br>Wastewater collection network present but not activated pending completion of main collector by CDR to route all waste to plant at Ghadir |
| Solid Waste | Production of 3-4 tons per day<br>Collections done by Sukleen |

*Source: Municipal Questionnaires – CAMP Office (2001)*

*Conclusion*

When considering all the above attributes and constraints related to Damour, one cannot but notice two facts:

- although historically people had been relocated out of their land, the sense of identity and roots to the land is very prevalent; and
- being a young community with a rich history, the town presents a unique opportunity to further develop as an agro-touristic based economy.

Its proximity to Beirut and Saida, makes it an easy resort that develops around agriculture. The unique location, the presence of all sustainable elements for a successful agricultural sector (rich history, water, soil and weather), should make a strong case towards enlisting the field of Damour as an agricultural reserve.

Although, efforts are being exerted for the protection of the agricultural fields from being developed commercially, co-ordination between the municipality and central authorities is limited and should be developed further mainly regarding the deployment and connection of wastewater networks to the main collector (that is currently at the detailed design phase).

Although discussion with certain farmers and traders reveal that certain scientific research regarding agriculture in Damour has been performed on an individual level, no direct promotion of ideas regarding farming in general and no capitalisation on the promotion of the Damour produce or the promotion of organic farming to meet the escalating demand of such produce in nearby Beirut is being effectuated.

With the on-going inclusion of Damour within the greater Beirut solid waste collection scheme, no programme for the reduction, recycling and reuse of solid waste exist, nor are there NGOs directly active in that regard.

**Environment, Agriculture and Fishery in Sarafand**

Sarafand depends on agriculture, fishing and tourism for sustenance. These sectors are not as productive and efficient as they used to be. The locals blame this dilemma to various factors, some environmental, and other economical and or political. Prior to the building of the Beirut-South highway, car service shops and retail business was a source of income for the City.

The coastal strip of Sarafand, as many coastal cities, has witnessed over the past years the proliferation of illegal constructions that can be literally described as “visual pollution.” On the other hand, the sandy beach of Sarafand has endured over the past years the illegal actions of sand extraction.

*Environment*

The current situation of basic infrastructure directly affects the coastal resources. While the potable water network covers 90% of the households, the exploitation of the underground water is uncontrolled.

The major portion of the wastewater collection network has been constructed in Sarafand. Around 90% of the dwellings are connected to the network that discharges directly into the sea. The direct discharge of untreated wastewater into the sea is polluting the “shallow” sandy and rocky beaches of Sarafand. No treatment plant servicing Sarafand is slotted for construction in the near future. Therefore, wastewater is expected to continue being discharged from the main network into the sea.

**Photo 52:**
**Main wastewater outlet in Sarafand**

As for the solid waste management, the municipality itself performs solid waste collection within Sarafand. Waste is being disposed off haphazardly in an open dump within a 10,000m$^2$ public property at the south-eastern part of the municipality. Field visits to the open dump and direct observation revealed that large amounts of unmarketable vegetables and fruit are being disposed off, uncontrolled, at the site. Access to the dumpsite is not controlled.

Although probably viable, no small-scale agro-food industry is operating in Sarafand. Additionally, no composting operation of organic material (segregated at the source) is taking place. Such operations seem logical in Sarafand.

One waste recycling operation was identified in Sarafand, namely an artisanal ornamental glass production family-run enterprise. The production of this enterprise is being sold across the whole country. The raw material used is mainly broken and used glass bottles.

Similarly to Damour, the main source of noise and air pollution is the traffic along the Beirut-South highway. At present, actual data regarding the level of noise and air pollution do not exist. In addition, the problem of air pollution is aggravated by the presence of the open dump in Sarafand where uncontrolled fires occur every now and then. On the other hand, some noxious odour problems were reported from the fields where compost (resulting from SW) has been used.

*Agriculture*

Almost two thirds of Sarafand's area is used for agriculture. Crops mainly include citrus and banana, but such crops as corn, wheat, exotic fruits and vegetable are also being cultivated. Cultivation within greenhouses is very prevalent. The farmers of Sarafand clearly stated that the lack of governmental assistance and guidance, and the non-existence of a well-structured market limit the agriculture.

Five springs are located in Sarafand. No surface water bodies exist in the area. The main source of water for irrigation has been groundwater and a water canal that is part of the Litani river irrigation network.

Among the most important agricultural constraints expressed by the community of Sarafand is the high cost of irrigation water from the Litani River, the major source for irrigation in the area. This fact has led the farmers to attempt the use the underground water for that purpose by digging artesian wells and pumping the water to the surface that in turn has resulted in two new constraints that were clearly expressed by the community, namely the high cost of fuel and electricity and the scarcity of underground water, reflecting the overuse of this precious water source.

**Photo 53:**
**Burning garbage in open dump in Sarafand**

**Photo 54:**
**Used bottles/glass for recycling into ornamental glassware in Sarafand**

**Photo 55:**
**Ornamental glassware made from recycled glass in Sarafand**

**Photo 56:**
**Agricultural plains of Sarafand, noting the urban sprawl**

*Fishery*

The fishery sector sustains the livelihood of more than 500 people in Sarafand. The fishermen possess about 180 boats. These fishermen claim sustainability is becoming harder due to the degradation of marine biodiversity and the lack of assistantship to the fishermen to purchase proper tools and equipment. Fishery production is constrained mostly through the dumping of wastewater, solid and hospital wastes into the sea, thus polluting the water, negatively affecting the quality and survival of marine life and interfering with the fishing process (solid wastes caught within the fishing nets). A constraint to this sector expressed only by this community is the inability of fishermen to teach the young generation the profession as the law prohibits children under 18 years of age to accompany their parents to the sea.

**Table 29: Municipality of Sarafand – general data**

| | |
|---|---|
| **General data** | |
| Population | 12,000 residents |
| Main Economic Driver | Agriculture, fishing, tourism and trade. Considered a medical centre for the neighbouring areas due to the presence numerous medical facilities |
| Health Services | 2 hospitals (100 and 75 beds) and 3 clinics |
| Educational Services | 9 Schools (3 elementary, 4 intermediate, one baccalaureate and one technical school) |
| Priority of the municipality and surveyed members of the community | Construct a waste water treatment plant<br>Proper solid waste disposal<br>Construct public green areas<br>Infrastructure<br>Reduce sea pollution |
| **Fishing** | |
| Fishing | A fishing COOP made up of 162 members was conceived in 1991<br>Presence of two fishing bays that include 200 boats |
| **Agriculture** | |
| Farms (Livestock) | One farm that contains 30 heads of cattle, 10 of which are dairy. The farm generates three trucks per year of manure ( (approx.11,000 kg). |
| Crops | Banana and citrus and wheat |
| Irrigation | Litani river, Awali river and private wells |
| Soil | All quaternary; Vertisols is dominant, and association of Calcic Eutric fluvisols (dark in colour) with Calcaric Fluvisols; also Calcatic Cambisols is present. (Updated Soil Map of Lebanon, Darwish and Collaborators 2002) |
| **Industry** | |
| Industry | 5 industries including nylon bags and glass, and two marbles (sawmills) and numerous car mechanics |
| Gas Stations / Lube Oil and Car Mechanics | 6 gas stations, 2 of which offer car wash services and all offer oil change services.<br>Four car wash and oil change services shops<br>Used oil is sold for 10$ / 200L to cement mixers and bakeries. Some used oil is dumped into the sewer systems |
| **Tourism** | |
| Restaurants / Resorts | 3 hotels, 15 restaurants and 5 cafes along the shoreline |
| **Waste Management** | |
| Waste Water | Presence of a wastewater network that covers 90% of the main street and that is discharges into the sea |
| Solid Waste | Production of 10 tons per day<br>Municipality collects and disposes the waste in an open dump within a 10,000$m^2$ public property |

*Source: Municipal questionnaires – CAMP Office (2001)*

*Conclusion*

Having a mixture of a sandy and rocky beach had enabled this village in the past to benefit of a tourism sector by constructing beaches, hotels and restaurants along the shore. The revitalisation of such an industry is essentially dependant on the cleanliness of its beaches, i.e. the containment and treatment of wastewater prior to discharge into the sea and development of strict rules to stop littering.

With the municipality doing the collection of solid waste, and local farmers and merchants at times directly disposing of organic waste in the open dump, three issues related to the solid waste dump in Sarafand come to questioning: 1) there is no control on what is being dumped at the site; and 2) there can be control over waste reduction since the parties delivering most of the waste can be approached directly (as farmers, merchants, municipal employees and the local officials) to capitalise on the possibility of developing local composting facility, and possibly small scale food industry at least in relation to the unmarketable produce.

Regarding the issues of wastewater and solid waste, there seem to be the need for a systematic and direct lobbying with the central government regarding the proper management disposal of solid waste, and resolving the issue of diverting the wastewater out of the central beachfronts.

The local ornamental glassmaker seems to be an opportunity that can be capitalised on to promote recycling, preservation of a local custom and heritage, and development of tourism.

**Photo 57: Fish market in Sarafand**

**Environment, Agriculture and Fishery in Naqoura**

Finally, the fishing port, with its scenic location is noticeably not being capitalised on as a touristic attraction.

*Environment*

Naqoura is a small village located to the southern Lebanese borders. The Israeli occupation for several decades, the political and military instability, as well as the absence of any manufacturing or polluting economic activities did help in preserving the outstanding environment and natural green areas of the village. Basic infrastructure exists in Naqoura.

A potable water network services the village and covers 100% of the households. The municipality is until now operating the underground well that constitutes the sole water source for the village.

**Photo 58:**
**Open dump in Naqoura**

Lately, a wastewater network was installed in the village by the MEW as an NGO promised to secure the financing of a wastewater treatment plant. However, the promised wastewater treatment plant is not executed up to now. Therefore, in attempt to prevent the direct discharge to the sea, the municipality diverted the wastewater outlet to Ain Valley without considering the potential pollution to the groundwater.

The municipality itself performs the solid waste collection and disposal activity within its jurisdiction. However, there is a lack of proper solid waste collection and disposal system in Naqoura that is mainly revealed through the presence of the open solid waste dump to the south of the town. The dump receives all waste types, mainly those generated by the UN compound and related hospital.

So far, Naqoura is still not connected to the South Highway (which currently stops in Aqbieh). Therefore, the noise and air pollution caused by heavy traffic do not exist. In addition, the absence of industrial and manufacturing activities render the area free form industrial air pollution.

The coastal strip of Naqoura has been practically preserved due to the war and the Israeli occupation over more than twenty years. However, after the withdrawal of the Israeli military forces and the return of the commercial activities in the southern region of the country, there is a high risk and a potential threat that the area will be subject to uncontrolled development projects. Therefore, there is an urgent need to take the appropriate steps for reviewing the land utilisation master plan and enforcing its application to prevent illegal project developments in the area that do not respect the preservation of the natural environment.

*Agriculture*

Most of the agricultural constraints expressed by the community in Naqoura coincided with the constraints in the CAMP area as a whole (absence of agricultural policies, high cost of production, absence of unbiased extension, difficulties in marketing, etc.). Data collected during meetings with local farmers revealed that approximately 300,000 $m^2$ is planted citrus trees, 350,000 $m^2$ banana crop and 30,000 $m^2$ tobaccos. Preliminary assessment reveals that a considerable soil rich and potentially cultivable land is left abandoned due to several factors such as lack of support, guidance, and markets. These factors are leading younger generations of farmers to presently seek work in other sectors. Olive groves are still abundant in the vicinity and to the east of the town centre.

Grazing is not allowed within town, but is permitted in the non-cultivated land on the outskirts, including in the 14 million $m^2$ of private land that is mainly forested with oak. Prior to the Israeli invasion, approximately 30,000 heads of goats used to graze in the area. Currently, the

numbers are minimal. Considerable area (almost 4 million $m^2$) of potentially cultivable land can be reclaimed for agriculture and cultivated on long term.

*Fishery*

Fishing practices are regular in Naqoura. The quality and quantity of fish and marine products collected is considered acceptable by local fishermen. Fishermen claim that unethical and improper fishing methods are still practised by some and the government is not taking proper measures to monitor and prevent this from occurring. They also expressed that the limitation in fishing equipment and material should be an issue that the government should try to assist in.

The fishery sector has a potential in Naqoura under the mere fact that almost 100 families depend on it. The absence of legal control on prohibited fishing practices (it is claimed that some of which has backing by influential people) is probably the most critical constraint within this sector. Other constraints include the rehabilitation of the fishing marina and absence of necessary fishing equipment and material (baits, nets, boat handling equipment, "help calling" equipment, etc). The high cost of fuel is also seen as a main constraint to the fishery sector in the area.

**Table 30: Municipality of Naqoura – general data**

| | |
|---|---|
| **General data** | |
| Population | 4,000 official and 1,800 residents |
| Main Economic Driver | Foreign transaction, UNIFIL, tourism and agriculture |
| Health Services | 1 clinic and UNFIL base hospital |
| Educational Services | 1 school (elementary) |
| Priority of the municipality and surveyed members of the community | Solid waste treatment plant<br>Construct a waste water channels and treatment plant<br>Vehicle for solid waste transport<br>Rehabilitating a protected area of 80, 000$m^2$ |
| **Fishing** | |
| Fishing | A presence of a fishing COOP made up of 40 members conceived in 2001.<br>Presence a fishing bay that is in great need for rehabilitation |
| **Agriculture** | |
| Beekeeping | 15-20 beehives for household use |
| Farms (Livestock) | No animal farms are present in this municipality |
| Crops | Banana, citrus, tobacco, and vegetables |
| Irrigation | Highly water rich area, presence of hundreds of well which supply households and agricultural fields |
| Forest cover | Oak cover with an area of 4,000 000 $m^2$ |
| Soil Types | Hablic calcisols (marly) is dominant (Updated Soil Map of Lebanon, Darwish and Collaborators 2002) |
| **Industry** | |
| Industries | No industries |
| Gas Stations | 2 gas stations without car wash. Oil and water are dumped into the wastewater channels |
| **Tourism** | |
| Restaurants / Resorts | Two legal restaurants and tens other that are illegally constructed |
| **Waste Management** | |
| Waste water | Presence of the wastewater network that is channelled into the Ain Valley to "according to local officials" reduce seawater contamination |
| Solid Waste | Municipality collects and disposes the waste in an open dump with the UNFIL waste |

*Source: Municipal questionnaires – CAMP Office (2001)*

*Conclusion*

The extent of benefiting from the rangelands and woodlands in Naqoura for tourism is currently non-existent. The expanse of these lands seems to be great potential for the development of natural reserve where controlled grazing of ruminants, like sheep and goat can take place**.**

The remoteness of Naqoura and its presence within a military zone for a lengthy period of time has developed some positive opportunities, including the availability of agricultural land that can be developed for organic farming. Establishment of protected coastal areas and the development of touristic traditional fishing areas for community livelihood are viable examples. Linked with organic farming, this area has a great potential for environmentally aware tourists and eco-tourism.

The potentiality of the area as a natural resort would dictate the remediation and closure of the open solid waste dump. The small community living in Naqoura with respect to the size of the surrounding land is an opportunity to develop environmental awareness.

**Photo 59**:
**Newly rebuilt fishing port in Naqoura**

# The Fishery Sector in CAMP Municipalities

The present study entitled “The fishery sector in the CAMP area” represents the senior project for a Bachelor degree in Environmental Science. It introduces the fishery sector in Lebanon in general and it tackles the details of this sector in the areas of the Damour, Sarafand and Naqoura. The study describes the situation, approaches the problems and proposes practical recommendations to be adopted within the proposed national strategy on integrated coastal area management, a strategy that is currently elaborated in the framework of Coastal Area Management Programme (CAMP).

Fishing has been a long tradition in the Mediterranean countries (especially in Lebanon), and many methods of exploitation of this resource have developed there from ancient times. Along with the benefit of fishing, it has also had many adverse effects such as the overexploitation of the marine ecosystem, the risk of eliminating species, changing the population’s proportion; and reducing the ecosystem diversity, etc.

Lebanon has 4,000 fishermen, based in the ports of Tripoli, Byblos, Jounieh, Beirut, Saida, Sarafand, Tyre and a few fishermen in the Naqoura. (Fishing as a job or hobby, Trans. Ministry of Agriculture, 1994).

On average the income per fisherman is US$100 per month, with such an income the fishermen can neither improve their lifestyles nor their fishing equipment. This income decreases in winter making the fishermen one of the poorest people in Lebanon. (Fishing as a job or hobby, Trans. Ministry of Agriculture, 1994). The boats, generally having a length between 8 to 10 meters, are well equipped and exploit the potentials offered by the actual fishing zones.

**Institutions in charge of the fishery sector in Lebanon**

The main ministries dealing with the fishery sector are the following:

- *Ministry of the Environment:* The MoE was established in 1993 with the mandate to formulate policies and strategies, fight pollution from various sources, establish protected areas, issue conditions for permitting the establishment of industrial plants.

  Decree № 5591, issued in 30 August 1994, organises the Ministry of Environment and it specifies its responsibilities and duties. In specific, Article 11 pointed out to the presence of the Department for the protection of the Natural reserves, including the fishery sector and states the following: “To protect all that is natural and to monitor the environment through the protection of all the natural resources such as water, soil, air, forests, the seashore, the river and all its aquatic and terrestrial organisms“**.**

- *Ministry of Agriculture:* The MoA is empowered to regulate and supervise duties related to agricultural wealth and soil preservation, control of hunting (in collaboration with MoE), fishing, use of pesticides, conservation of protected forests, reforestation of state and private lands and the implementation of laws and regulations such as the forests law.

  The responsibilities of the MoA are summarised in the Article 100 of law № 5246. Within the Department of marine, fishing and hunting, the related tasks include:
  - monitoring of marine and freshwater fishery sector;

- issuing licenses and permits for the practice of fishing activity;
- rehabilitation and construction of fishing ports and of fishing markets with the co-operation of the specialised regional units along with the Ministry of Public Transport;
- improving the situation of the fishermen by forming fishermen syndicates and co-operatives that provide them with health and social insurances;
- regulating the marine fishing activity by specifying the hours during which the fishing profession can be practised. Identification of natural reserves and the areas where the fishing profession is banned;
- monitoring of applied research and marine biology to improve the fishing techniques practised and to teach the principles of boat exploitations;
- setting training and awareness programmes;
- regulating fish breeding and distribution as well as conducting experiments and analytic tests on local and introduced fish;
- studying the means and methods to survey the fauna including birds.
- issuing a convention for the protection of the marine environment as well as highlighting the most appropriate fishing techniques along with the co-operation of MoE;
- implementing the laws and decisions that are related to the marine environment, specifically decree/law 6349 of the date 16/3/1961, dealing with the organization of a monitoring team for the forest, hunting and fish.

- *Ministry of Public Transport:* The MoT was founded by law № 214 of year 1993. It was given the authority to protect maritime public domains and territorial sea, and to fight all forms of pollution caused by shipping operations, air and noise pollution produced by vehicular traffic. The lack of instrumental and financial resources is considered as a burden towards enabling the Ministry to undertake its duties.

  MOT is responsible for giving permits for the construction and rehabilitation of fishing ports or harbors. It is also responsible for giving the fishing boats their license.

- *Ministry of Labour* has also issued a law for the fishermen that states that people under the age of 15 years old are not allowed to practice fishing as a career o profession.

The other Bodies dealing with the fishery sector are the following:

- *Fishermen syndicates:* there are 6 fishermen syndicates in Lebanon which are found in Beirut, North Lebanon, Sour, South Lebanon, Bekaa, and in the lake of Qaroun.

As an example to illustrate the fishermen syndicate, the Beirut syndicate was visited to get information about its goals and objectives.

**Mandate of the Fishermen Syndicate of Beirut**

The goals of the Beirut fishermen syndicate are:

- the protection, encouragement and improvement of the economical as well as industrial statues of the fishing profession in Lebanon;
- protection of the interests of the members, defending their rights, and working on improving their social, health, educational, and economic statues;
- encouragement of the movement of the syndicates;
- organizing social and athletic events for the members of the syndicate.

*Source: Main law for the Beirut Syndicate*

- *Co-operatives:* There are 38 fishermen co-operatives which are scattered throughout Lebanon: 15 co-operatives in South Lebanon, 5 in Mount Lebanon, 3 in the Bekaa region, 13 in the North of Lebanon, and 2 in Beirut.

**Mandate of a fishermen Cooperative**

The goals of a cooperative are to improve the fishermen's economic and social situations. This can be done through:

- providing members with all fishing tools needed in cheaper prices than usual;
- training the fishermen on the methods of fishing with modern techniques;
- selling their fish production and offering them direct payment for their products.;
- providing members with governmental assistance.

*Source: Handout for the regulations of the Cooperative*

*Fishery-related laws*

The Lebanese legislation concerned with the organization of the fishery sector relates mainly to monitoring coastal fishing, providing license for fishing in rivers, banning the fishing activity for certain types of marine species and the use of specific types of fishing nets. The following table provides a summary of the existing laws related to fisheries and fishing.

**Table 31: Lists of Lebanese legislation related to fishery and fishing**

| Legal instrument | Date | Description |
|---|---|---|
| Decision 1104 | 14/11/21 | Identification of the coastal zone. Banning fishing in ports, the use of products that anaesthetise or poison fish or pollute the water, and the use of explosives in fishing and sets sanctions for breaching the fishing law |
| Decision 372 | 25/6/1926 | Rules and regulations related to fishing techniques of fishermen and fishing boats |
| Decision 2775 | 28/9/1929 | Monitoring coastal maritime fishing |
| Decision 70 | 5/5/37 | Organization of marine fishing along the Lebanese coast |
| Law | 19/11/47 | Licensing for fishing in rivers |
| Decree 11882 | 3/6/48 | Organization of riverside fishing |
| Law | 25/5/62 | Amendments to the maritime fishing law |
| Decision 1/93 | 16/6/1971 | Conditions for the use of floaters in fishing, in the recreational use and ports |
| Decision 1/63 | 16/3/93 | Banning the fishing of sponges along the Lebanese coast for the period of five years |
| Decision 1/28 | 16/2/94 | Requirements for the breeding and selling of small fish |
| Decision 1/226 | 14/12/94 | Distribution of fishing nets and equipment to the fishermen co-operative |
| Decision 1/254 | 8/12/1995 | Organization of scuba diving |
| Decision 1/385 | 26/1/97 | Banning the fishing along the Rivers and their outlets along the coastal zone |
| Decision 1/281 | 19/11/98 | Banning the fishing of sponges along the Lebanese coast for an additional period of five years |
| Decision 1/18 | 2/2/98 | Creation of awareness centres for fishing and hunting |
| Decision 1/115 | 23 / 6/98 | Organization of the Marine research centre in Batroun |
| Decision 12841 | 7/8/98 | Organization of the use and the protection of fishing and recreational ports |
| Decision 1/279 | 19/11/98 | Banning the fishing of the sea turtles |
| Decision 1/125 | 23/9/99 | Banning the fishing of specific kinds of marine species |
| Decision 1/126 | 27/11/01 | Re- permitting the use of specific types of fishing nets on the Lebanese coast |

*Source: CAMP project, Report on agriculture, environment and fishery, 2002*

*Fishing techniques used in Lebanon*

According to the CAMP activity report termed "Diagnostic Analysis of the Environmental, Agricultural and Fishery sectors in CAMP Area (2002)", the main fishing equipment used are beach seines, trammels, nets, long line round haul nets and shore-based poles. The gears used for fishing practices are:

- Beach Seine 9%
- Trammels 22%
- Nets 3%
- Long line 22%
- Round haul nets 26%
- Pole (shore–based) 1%

Most of the fishing techniques which are adopted in the Mediterranean are also practised in Lebanon, some of these fishing techniques have been banned in Lebanon because of their environmental impacts.

*State of the fishery stock in Lebanon*

It is estimated that the Lebanese citizens need 25,000 tons of fish per year; but only 4,485 tons per year are produced despite the fact that Lebanon has a coastal zone that is 220 km long. (Boulos, 1994).

The "Regional Socio-Economic Development Program for South Lebanon" report indicates that in the year 1996, the fish production amounted to 4,485 tons: production of sea fish (4,110 tons) is more common then the freshwater fish (375 tons). If a comparison is made between the productions of sea fish in Lebanon to that in the neighbouring countries, it is evident that Lebanon has a high production rate, while freshwater fish production continues to lag behind. Breeding of sea fish along the coast is not a common practice and this is because of the strong coastal currents.

Off shore fishing of pelagic fish (tuna, blue fish, etc.) using draglines has become trendy in the past decade, mostly among sports amateurs equipped with motor speedboats, (State of the Environment, Ministry of Environment, 2001).

Table 32 states the amount of sea fish production in the neighbouring countries. If these levels are compared to those in Lebanon, then the length of the coastline in Lebanon can easily explain the difference between production in Lebanon and the neighbouring countries (State of the Environment, Ministry of Environment, 2001).

**Table 32: Fish production in Lebanon and neighbouring countries (1996)**

| Country | Sea fish production (tons) | Freshwater fish production (tons) |
|---|---|---|
| Lebanon | 4,110 | 375 (mostly rainbow trout) |
| Syria | 1,941 | 7,290 (mostly carp) |
| Palestine (Gaza) | 1,229 | - |
| Israel | 2,939 | 17,568 (mostly carp and tilapia) |

*Source: State of the Environment, 2001*

*State of the fishery sector as an economic sector in Lebanon*

The Lebanese society needs about 75 million dollars of fish per year, while its production amounts only to 7 million dollars, (Fishing as a job or hobby, Trans. Ministry of Agriculture 1994). The 4,500 tons of fish produced in Lebanon is far below the level of the internal consumption. Therefore, Lebanon imports more than 10,000 tons of fish (1996), essentially from three areas: the Gulf countries, Morocco, and Turkey. The fish is lower in quality and two to four times less expensive than the local catch. Fish is also imported, in smaller quantities, from Egypt and Senegal, (Regional Socio-economic Development Programme for South Lebanon, 1999).

**Fishing is a fishy business**

Musa Annay who is a wholesaler says:

"There are 80% of fish is imported from abroad, the fish is transported by plane from Egypt, Senegal, Mauritius, Turkey and sometimes the Emirates."

"The local fish is more expensive as it is fresher, while the fish that is imported is usually about 48 hours old."

Annay's estimate of the percentage of fish imported differs from a recent report by the Lebanese American University which estimates that only 30% is imported. The conflicting figures point to the confusion that surrounds which fish have been imported and which fish has been locally caught.

*Source: Daily Star Newspaper, 2003*

*The environmental impacts of the Lebanese fishery sector*

The most common problem which is faced in the Lebanese seas is the loss of biodiversity. According to the article "Empty waters" written by the Daily Star it is evident that there is an eradication of the marine life. Mr. Jamal Younes who is a fishermen, skilled diver, and an environmental activist says that, "During the 1960s and early 70s, the water was crystal clear and the marine life more diverse". Mr. Younes continues "Nowadays and with the help of other dedicated divers and environmentalists we strive to protect what is left of marine life or restore what has been a haven for migrating sea birds and animals".

Marine waters receive contaminated surface water from river outlets, raw or partially treated domestic and industrial wastewater from the coastal zone, agricultural runoff from coastal agriculture, leachate and drifting waste from seafront dumps, hydrocarbons from accidental or routine spills, cooling water and lubricating waste oil from thermal power plants, and ballast waste dumped illegally. In the year 2000, the Council for development and reconstruction (CDR) noted that there are about 53 wastewater outlets along the coast. Coastal waters are also affected by countless beachfront resorts, numerous reclamation and sea embankment projects. The deterioration of the coast constitutes significant threat to marine ecosystems and organisms.

The most common pollution that is threatening the Lebanese coast is a result of untreated sewage, oil spills, industrial and thermal power plants and the open dumps that will be discussed the following paragraphs (Regional Environment Assessment Report on the Coastal zone of Lebanon, CDR, 1997).

Sewage effluent are the greatest source of organic material discharged to the fresh waters and then into the sea. The most commonly used measurement of the amount of pollutant organic material in water is a parameter referred to as biochemical oxygen demand or BOD. When bacteria act upon the organic matter in sewage or certain industrial wastes discharged into water ways, large amounts of dissolved oxygen are rapidly used up. This can result in fish kills and dramatic alterations in the aquatic environment.

Many sewage pipelines were built years ago when little was known about the effects of pollution and it was thought that the sea would dilute the sewage. Since then the amount of sewage has increased considerably and very often organic matter is washed ashore by the incoming tide.

It is to note that about 2.3 million Lebanese people live in the coastal zone, which release approximately 950,000 $m^3$ of wastewater a day that end up in the sea. This will continue as sewage treatment plants are not affordable. As sewage, fertilisers and other, nutrients are poured into the seas, sea weeds and algae spread very quickly, using up all the oxygen that fish need to stay alive (Regional Environment Assessment Report on the Coastal zone of Lebanon, 1997).

Animals and plants may be affected by the physical properties of floating oil, which prevents respiration, photosynthesis or feeding. Higher vertebrates, such as the seabirds, whose coats get covered in oil, lose buoyancy and insulation, while the ingestion of oil, frequently the results of attempts to clean the fur or plumage, and may prove toxic (Biology of Freshwater Pollution, 1996). Fish that live in waters receiving oily wastes develop an objectionable taste, known as tainting, which may result in serious economic loses to commercial fisheries. Wastes from outboard motor engines can also taint fish flesh. Taints are due mainly to unsaturated aliphatic hydrocarbons and some aromatic hydrocarbons (Biology of Freshwater Pollution, 1996).

*Pollution from industries and thermal power plants*

The most polluting industries are those which are considered the high-risk facilities. These kinds of industries include tanning and dressing of leather, manufacture of paper and paper board, production of gas products, manufacture of fertilisers and nitrogen compounds, manufacture of cement lime and plaster and the manufacture of weapons and ammunition. (State of the Environment report, MoE, 2001). Possibly the most damaging environmental effect of a power station is that large numbers of organism may be sucked in through water intake. Larger organism, such as fish may be killed on the intake screens while smaller species pass through the plant. Larval fish and fish eggs can also be destroyed by the intake and this can lead to an alteration of the breeding cycle (Biology of Freshwater Pollution 1996). Another harmful effect that results from thermal power plants is the struggle that the fish face when the waters temperature changes. As the temperature increases, the respiration and heart rate of a fish will increase in order to obtain oxygen for an increases metabolic rate, but at the same time the oxygen concentration of water is decreased (Biology of Freshwater Pollution, 1996).

In the absence of industrial wastewater treatment, pollution loads into surface and coastal waters likely would increase. Without more information on current industrial wastewater discharges, however, it is impossible to project future pollution loads carried by industrial liquid effluent. Given the anticipated industrial growth, however pollution levels in surface and groundwater and coastal waters could reach alarming levels in the following industrial hot spots[24]:

- Chekka: sea discharge of asbestos and other suspended particulate matter (cement products plants);
- Selaata: sea discharges of phosphates and sulphates (fertiliser plant);
- Zouk Mosbeh-Zouk Mkayel: various industrial discharges to streams and sea (bleaches, dyes, etc.);
- Dora industrial area (petroleum storage, tanneries, etc.);
- Shoueifate, Ain Anoub, and Bchamoun industrial areas: wastewater discharge to the sea via the Ghadir stream;
- Ghazieh coast and Nahr Saitaniq (tanneries, soap factories).

[24] Source: Regional Environment Assessment Report on the Coastal zone of Lebanon, CDR, 1997.

Finally, the continued disposal of solid waste in uncontrollable landfills and waterfront dumps would exacerbate the current patterns of water, soil, and sea bottom contamination. In the absence of clay or plastic lines, leachate would seep into groundwater and seawater resulting in both organic and inorganic contamination (Regional Environment Assessment Report on the Coastal zone of Lebanon, CDR, 1997).

## The Fishery Sector in the Three Selected Municipalities

### Damour

*Current situation of the fishery sector*

Despite the fact that the Damour Sea is a mixture of rocky and sandy beaches which is the perfect shore for fishing, the practice of this profession has been restricted in the Damour area because of the lack of a port. In addition, there are no great deals of families that rely on fishing as a source of income.

In the past the outlet of the Damour Sea was a site where the fishermen used to place their fishing boats. Because of the winds and high tides most of the boats were destroyed so this act came to an end. Nowadays the fishermen from the Damour are faced with the burden of placing their boats in the neighbouring villages.

*Number of fishermen*

The exact number of fisherman in the Damour area is very hard to track because of the immigration of most of its residents and due to the fact that no port exists in the area, many people tend to live in other areas for fishing.

*Average ages of the fishermen*

According to a personal interview with Mr. Nabil Chaaya, a local fisherman, who happens to knows all his colleagues in the profession says, “the ages of the fishermen in the Damour range from 35 years to 70 years”.

*Number of boats*

Around 12 boats owned by the Damourine fishermen are hosted in the Dora port. Three to four other boats stay in the Saadyat, and a couple of boats in the Jounieh port.

*Types of equipment used*

There is a diversity of equipment used by the fishermen. Some use primitive equipment while others have better financial situations so they use modern equipment. The primitive equipment used comprises the nets, hooks, and beach seines. But the Francis family, a group of 3 brothers, uses the modern techniques of fishing and makes very good production from their profession. They use the boat seines technique using a big mother boat to pull about 5-6 small boats into the sea, and lights are used to attract the fish into big fishing nets.

*Situation of fish markets*

In the past, two fish markets used to be found in the Damour area. At present, no fish markets exists due to a lack of port in the area; and because of shortage of proper transportation means, it was very difficult for the fishermen to work in Beirut and to transport their fish production to the Damour. Nowadays most of the people in the Damour buy their fish from Mr. Fakhoury, an independent fisherman, who sells fish door to door in the area. The Damourian fishermen who work in Dora sell their fish production to two fish markets: the “Chamoun port”, which is

found near Dora port. Fishermen sell their goods and are directly paid. The other fish market in the area is the "Karantina area".

*Fishermen Co-operative and Syndicate*

The Damour area does not have a co-operative neither a syndicate, as a consequence to the lack of a port which is conditional to apply for a co-operative (Ghafari, 2003, personal interview). However, most of the Damourian fishermen are members of the Beirut syndicate and the Dora co-operative because (1) most of the fishermen work in the Beirut area and (2) Damour area is legally considered a part of the Greater Beirut area.

*The livelihood of the fishermen*

The fishery activity cannot sustain the livelihood of the Damourian fishermen who have to pay extra charges such as transportation and face low production due to the competitiveness with local fishermen in other areas.

*Problems faced by the fishermen*

There are many problems that the Damourian fishermen are facing. These are:

- Lack of fishing port in the Damour area, which stops the fishermen from organising themselves into a co-operative.
- The setback of placing their boats in neighbouring areas. One example is the high transportation costs, the fact that their boats are placed in distant areas, the fishermen have to leave their home town in order to fish in other areas.
- Competitiveness, because fishermen carry out their activities in other areas, competitiveness with hometown fishermen is faced.
- Decrease in the number of fish markets in the Damour area because fishermen are not provided with proper equipment needed to transport fish for long distances, so the fishermen prefer to sell their fish directly.
- Fishermen leave their sandy and rocky shores to go and fish amongst the crowd and pollution of the city.

*Conclusion*

In conclusion, the Damour area needs the construction of a fishing port and this will lead to a great improvement in the fishery sector of the area. Once a fishing port is constructed automatically it can be said that the livelihood of the Damourian fishermen will be sustained if they put a little hard work.

**Sarafand**

*Current situation of the fishery sector*

The fishery sector is one of the main economic sectors in the Sarafand since it sustains the livelihood of about 700 fishermen in the area.

*Number of fishermen*

According to Mr. Khalil Taha, the president of the Tyre syndicate, "There is about 700 fishermen in the Sarafand area, amongst which 100 are Palestinians." Fishermen from the Sarafand, Ghazieh, Adloun, and Saksakiye come to the Sarafand area to practice their profession. The ages of the fishermen range from 16 years old up to 70 years old, fishermen from the Sarafand start so young as part of their social inheritance.

*Number of boats*

According to Mr. Khalil Taha , there are about 167 boats of different sizes in the Sarafand area. The boats are in great shape because their owners maintain them every 6-7 months.

The sizes of the boats vary from 2-3m and from 13-14m. Since the Sarafand area has three fishing ports, fishermen do not have to go to a lot of trouble to find adequate places to leave their boats. The three ports are the "Zahrani" port, the "Ain el-antara port", and the port that has been naturally formed along the years in front of the Mounes Hotel.

- *The Zahrani port:* It is the largest port which occupies the most area and hence holds the largest number of boats is the "Zahrani port" which was constructed 8 years ago. The construction of the Zahrani port began in the year 1995 and until now it is not yet completed. The wall that plays the role of a wave breaker and separates the shore from the internal part of the port needs to be completely built. But all in all the port is in an allowable state and it was built with great perfection and care.

**Photo 60:**
**The Zahrani fishing port**

**Photo 61:**
**The Ain Antara port**

**Photo 62:**
**The Mounes Hotel port**

- *The Ain Antara port:* The second port which is named Ain Antara port is much smaller than the Zahrani port and hosts about 20 boats. The port was constructed 40 years ago and it was the first port to be built in the Sarafand area. This port is used by the fishermen that live in the houses located nearby this port, they tend to feel a sense of security when they are able to oversee their boats from their houses. The port is in need of immediate rehabilitation. The walls that separate the bay from the place where the boats are kept are completely destroyed so they lead to the waves reaching the boats and causing their destruction. There is an outlet of waste water that pours directly into the port and this leads to the deterioration of the water quality.
- *The Mounes Hotel port:* The third port is a 10 years old port, which has naturally been formed by erosion, in front of the Mounes Hotel. It is said that the chief of the Parliament also helped, in the rehabilitation of this port that is now considered one of the best ports in Sarafand area, as in the case of the Zahrani port. The port includes few boats not exceeding 20 boats. Most of the boats that park in this area fish by using the technique of shooting fish.

*Presence of a Co-operative*

A co-operative is present in the Sarafand area, which is situated next to the Zahrani port. The co-operative is a fish market in which 85% of the fishermen use to place their stocks and receive immediate payment, while the co-operative gets 5% out of the total cost.

The president of the sellers syndicate Mr. Mohamoud Naamat Abas, says that the only problem that the co-operative is facing is that there is no law issued to protect the co-operative if the customers do not pay as the receipt given by the co-operative is not issued from an official receipt book. The Co-operative has provided the fishermen of the Sarafand with the benefit of selling their goods on site.

*Fishing techniques used*

There is a great variety of techniques used in the Sarafand which range from nets, trawls, hooks but the most common technique is the boat seines. *The Boat seines or "Jaroufi" is* commonly practised in the Sarafand area in the beginning of the summer season. Not all of the fishermen can practice fishing using Boat seines because it is a complex technique requiring high financial means or professional fishing skills. Photo 64 illustrates the Boat seines found in the Sarafand.

*Situation of fish markets*

Fish markets are a very common trade, since fishing is such an old local profession with 7 fish markets in the Sarafand area. There are also two fridges in the area which are used to store the imported frozen fish.


**Photo 63:**
**The fishing co-operative in Sarafand**

**Photo 64:**
**The Boat seine found in Sarafand**

*Conclusion*

The fishery sector in the Sarafand area is in a great state being the main economic driver for about 700 people depending on for their livelihood. It is to note that Sarafand is famous for its fish restaurants as well as its 7 fish markets people coming from all around Lebanon to buy their fish products. The fishermen of Sarafand have an advantage that both their co-operative and the Tyre fishermen syndicate are providing them with some help. The only two problems that this area is facing are the following:

- the direct discharge of wastewater into their fishing ports which leads to the sea pollution and thus contamination of the marine ecosystem; and
- both the Zahrani fishing port and the Ain Antara fishing port are in need of rehabilitation.

The most common fishing technique is the boat seine which is legally prohibited during the period of May 15 till the end of September, if this is the case in the Sarafand area then the marine life is comparatively safe.

**Naqoura**

*Current situation of the fishing sector*

Fishing practices are regular in the Naqoura due to the presence of a striking rocky shore with clear blue water.

*Number of fishermen*

Fishermen from Byada, Tair Harfa and Alma come to the Naqoura to fish. There are about 90 to 100 fishermen in the Naqoura area, 50 of which are married and the others are single (Taha, 2003).

*Number of boats*

According to a personal interview conducted with the fishermen of the Naqoura, there are 17 boats in the area.

*Naqoura fishing port*

There is one fishing port that is found in the Naqoura area (Photo 66). The Naqoura fishing port, in comparison to the Zahrani port is much smaller in size, and occupies about 20 boats.

The wave breaker or in other words the wall that separates the water from the shore is in immediate need of rehabilitation. Due to weathering, the wall has been cracked and is no more capable of protecting the fishermen and their boats from the waves.

**Photo 65:**
**The Naqoura sea**

*Situation of fish markets*

There are three fish markets found in the Naqoura area, in which all of them receive their products from local fishermen. In case of product excess, fish are sent to Beirut markets. The Naqoura fishermen highly suffer from competitors with imported fish.

*Presence of a Co-operative*

According to the law that was issued on the 7th April 2001, a co-operative was established in the Naqoura area. The co-operative tries to facilitate the profession of fishing for its members.

Not all the fishermen from the Naqoura are members of the co-operative and according to records that were taken in the year 1994 ". There are seventeen fishermen which are members.

*Conclusion*

The fishery sector in the Naqoura area can be considered as being in an acceptably balanced state since it is a small area with no big number of fishermen and one fishing port that about fits them all. The fishing port of the Naqoura is in need of rehabilitation and little more work can be done to make the port bigger so that it would fit the future generation of fishermen. The Municipality of the Naqoura is participating in many environmental projects to conserve their area. Competitiveness with imported fish remains a serious problem for fishermen, especially that the Lebanese people do not know how to differentiate between the local fish and imported fish (according to Naqoura fishermen).

**Photo 66:**
**The fishing port in Naqoura**

**Photo 67:**
**Fishermen fixing their fishing nets in the Naqoura port**

**Table 33: Comparative analysis of the fishery sector in the 3 municipalities**

| | Damour | Sarafand | Naqoura |
|---|---|---|---|
| **Socio -economic** | Inhabitants are not dependent on the fishery sector | Inhabitants are dependent on the fishery sector | Inhabitants are dependent on the fishery sector |
| **Economic** | Fishery sector does not affect the economy | Main economic driver | Fishery sector partially affects the economy |
| **Environment** | Acceptable environmental conditions | Environmental conditions are not acceptable | Acceptable environmental conditions |
| **Fish stock** | Low production | High production | Moderate production |
| **Co-operative** | Lack of co-operative | Presence of co-operative | Presence of co-operative |
| **Fishing syndicate** | Part of the Beirut Syndicate | Part of the Sour Syndicate | Part of the Sour Syndicate |
| **Fishing ports** | Lack of ports | Three ports | One port |

*Recommendations*

- *For the Municipalities of the Damour, Sarafand and Naqoura:* Each municipality should be responsible for providing its community with the essential things that are needed in the area. The most essential thing for a successful fishery sector is to have a fishing port which then encourages amateurs to take fishing as a profession. If an area was not to have a fishing port (as in the case of the Damour) then it is the mandate of the municipality in co-ordination with concerned central institutions to devise a plan of where and how a fishing port is to be formed and then followed up. For instance, if the Damour municipality takes a little bit of time and tries to follow up on the subject then a fishing port will be formed because the Damourine fishermen have the right to have a fishing port.

  Another very important mandate for the municipality is monitoring the actions of its community. Each municipality should form a team of citizens whose job is to report violations that have been carried out, among others the fishing techniques used and if the fishermen are having acceptable conditions to enable them practice their profession.

- *For the Fishing Syndicate:* Along with achieving the goals of the fishing syndicate that have been stated above, the syndicate should take action to improve the transfer of technology

regarding the fishing technologies and the know-how to the fishermen. The fishermen syndicates should be supported by external experts from the universities, national research centres and developmental projects and programmes, and could organise training sessions and workshops for the fishermen so that they learn the most environmentally and modern ways of fishing. Fishermen Syndicates could also be responsible for developing the necessary educational leaflets, posters, booklets or calendars that specify and simplify the laws and regulations that each fisherman should follow.

- *For the Ministries of Agriculture and Environment:* The governmental authorities that are responsible for the fishery sector in Lebanon are the Ministry of Environment and the Ministry of Agriculture. The second and most important step after issuing a legislative framework for the fishery sector is the surveillance and enforcement of fishing operations, a crucial step towards good fishery management. However in most of the Mediterranean countries there is a lack of real commitment by the authorities to undertake surveillance and enforcement of the regulations. It is necessary to introduce regulations which are realistic in the circumstances and which need enforcement. A single entity such as the Department of Fisheries should be given overall control for surveillance and enforcement, and not, as is so often the case, a number of authorities like the police, the navy and the coastguard.

  Another major problem which faces the Lebanese fishery sector is the import of fish products from foreign countries. The authorities should deal with this problem by either reducing imports or promoting import substitution. In Lebanon the demand of fish exceeds the fish supply for demersal species while some other kinds of fish are not available. Effort has to be put so that Lebanon reduces the import of fish and then increases its local fish production.

  One point that must be monitored is the coastal zone activities that lead to the degradation of the water quality. The coastal activities include oil and gas exploitation, waste disposal, marine transport, mining, tourism, urban development, agriculture and forestry, which all have an impact on fisheries. Available references indicate that comprehensive coastal management planning is difficult to achieve in Lebanon and is rarely followed by comprehensive plan implementation because of the lack of adequate institutional structures, trained manpower. Possibly a political intervention will bring about the changes needed.

*Conclusion*

In conclusion, it is evident that each of the Damour, Sarafand, and Naqoura municipalities need to improve their fishery sectors. To have a more promising future, the Lebanese fishery sector should take into consideration the following steps that will improve its situation. These include: The construction and rehabilitation of the fishing ports. In the case of our study, a fishing port should be built in the Damour area while in the Sarafand and Naqoura the fishing ports should be rehabilitated. An awareness campaign or training workshops should be given to train the fishermen on the use of the modern fishing techniques that will lead to an improvement in the fish industry. The Lebanese legislative framework is a comprehensive and realistic law, so steps have to be taken to implement and enforce these regulations. Once all these steps are taken into consideration then this will assure the boast in the fish industry along with the restoration and protection of the marine life.

# Cultural Heritage

### Study Objectives

The aims of the Cultural Heritage Component of CAMP were drafted as follows:

- to collect data related to the nature and type of the cultural resources within the area defined in the project scope;
- to assess the overall significance and condition of these resources in order to properly identify plans and interventions in favour of their conservation and sustainable development and use;
- to develop operational guidelines for their proper management; and
- to identify local requirements in terms of essential human resources and qualified personnel for implementing potential management plans for the available resources.

Based on these objectives, work on the CAMP Cultural Heritage component started in June 2002 and ended in March 2003 for the Phase I and II components of the program. The results of this work were based on background research, field surveys, discussions with local inhabitants and municipal representatives, and personal assessments.

### Study Scope

The Cultural Heritage Component of CAMP is limited in scope to the analysis of the cultural resources of the area extending from Khaldeh south of Beirut to Naqoura south of Tyre. Two levels of inquiry are involved:

- first, a detailed survey and analysis of the cultural resources present within the municipal limits of Damour, Sarafand and Naqoura in terms of both the cultural tangible and intangible heritage (albeit the latter has not been fully covered);
- second, a place-type survey within the coastal belt extending from Khaldeh to Naqoura, targeting only large archaeological sites of major significance and located very close to the sea.

Within these criteria, two main constraints were evident:

- the lack of significant and up-to-date documentation pertaining to the location and nature of the cultural resources in the CAMP area. This makes any survey for inventorying the heritage of the coast a huge task, outside the scope of the CAMP Heritage component project; and
- the lack of previous fieldwork involving the mapping of cultural resources on the coast, thus requiring the organization of a limited ground survey for data collection.

In spite of these two major constraints, a focused ground survey was planned and implemented within the municipal limits of Damour, Sarafand and Naqoura in order to build a comprehensive picture of the existing resources, their types, and conditions and in order to identify management requisites and propose operational procedures that could be integrated within the integrated management of these resources along the coastal area.

## CAMP Cultural Heritage Resources

*Background*

The coastal area of Lebanon is wealthy in cultural resources, some of which date back to the 3rd millennium BC and are characterised by continuous settlement and occupation of coastal locations for centuries. Because of its small territorial area and its high population density, the coastal fertile strip of land and the rest of the country are heavily settled and constantly under pressure for new development. Pressure often comes in conflict with heritage conservation and management jeopardising as a result the preservation of the rich cultural resources which abound throughout the landscape.

Issues affecting the cultural heritage of CAMP are different from those relevant to the northern portion of the Lebanese cost. Although culturally very similar, both coastal strips have differing levels of threats and constraints since the northern part, at least up to the longitude of Jbeil, has been heavily damaged by infrastructure works and industrialisation. From Jbeil onwards, one can say that similar concerns of heritage conservation and management exist and it is therefore of relevance to apply some of the proposed solutions, tools and mechanisms for the safeguard of the cultural resources of CAMP in that area in order to attain some form of balanced integrated management.

*Characterising the heritage of CAMP*

Cultural resources within CAMP belong to the tangible and intangible categories of heritage; they have been grouped under representative types in the figure below.

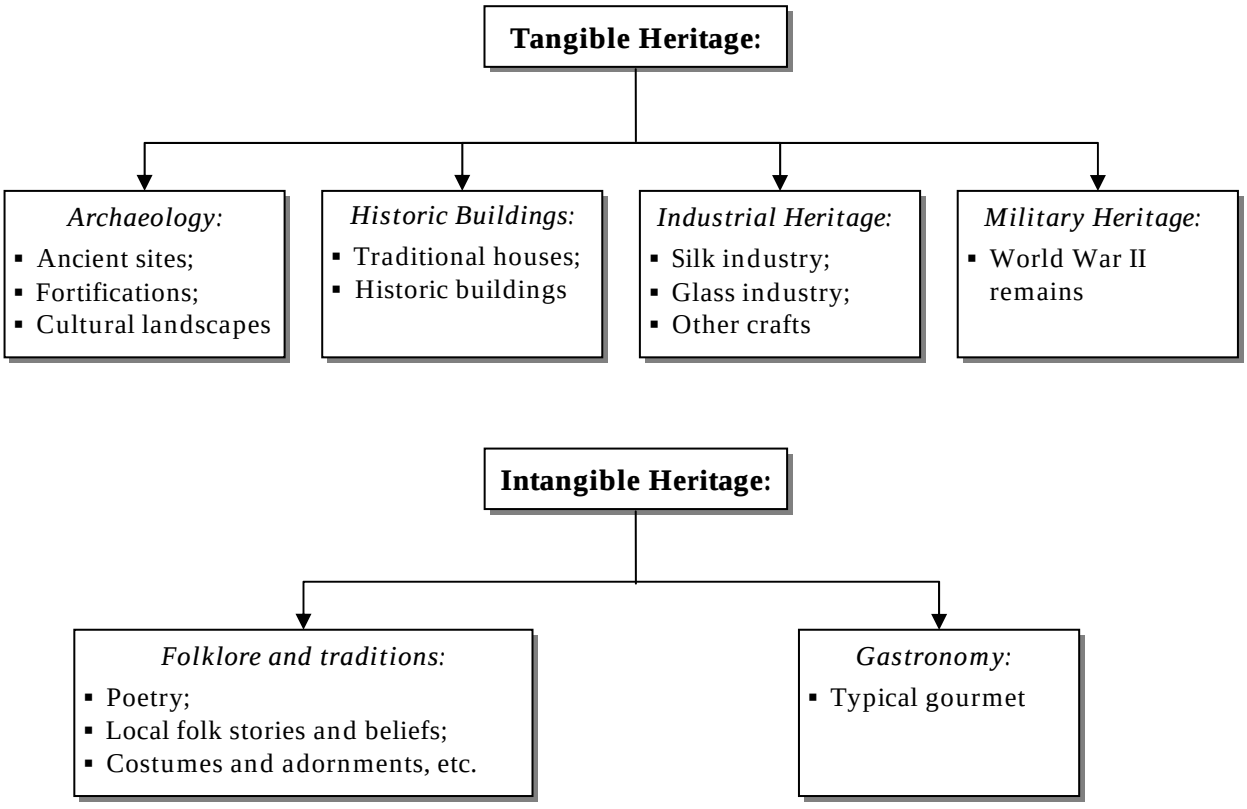



**Figure 14: Representative types of the cultural resources**

## Particularities of the Municipalities Cultural Heritage

The survey of the heritage resources of CAMP has shown that special types of heritage distinguish each town.

*Damour*

- Historic and vernacular architecture;
- Landmark buildings;
- WWII remains;
- Industrial heritage;
- Surviving old traditional crafts and artisan productions.

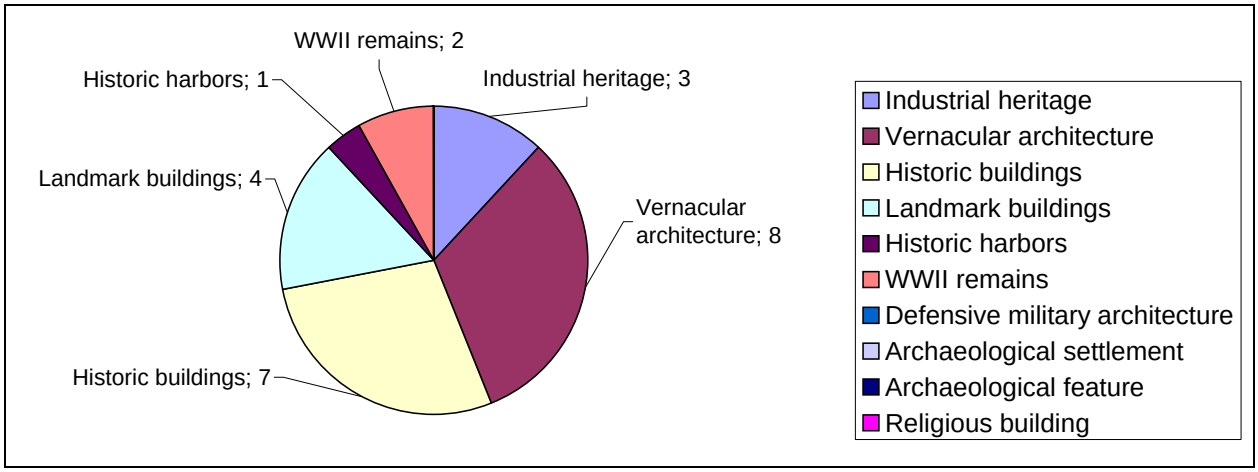



**Figure 15: Relative proportions of Damour heritage resources**

*Sarafand*

- Ancient archaeological mound;
- Religious tradition;
- Defensive military architecture;
- Culinary fish-tasting;
- Surviving old traditional craft and industry.

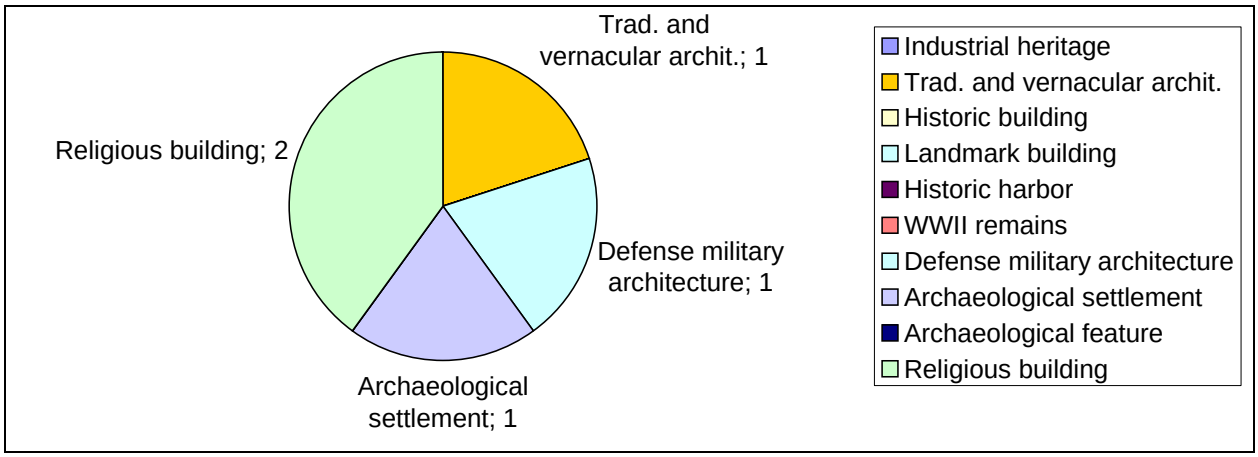



**Figure 16: Relative proportions of Sarafand's heritage resources**

*Naqoura*

- Cultural landscape;
- Old town core;
- Surviving fishermen's' trade;
- Defensive military architecture.

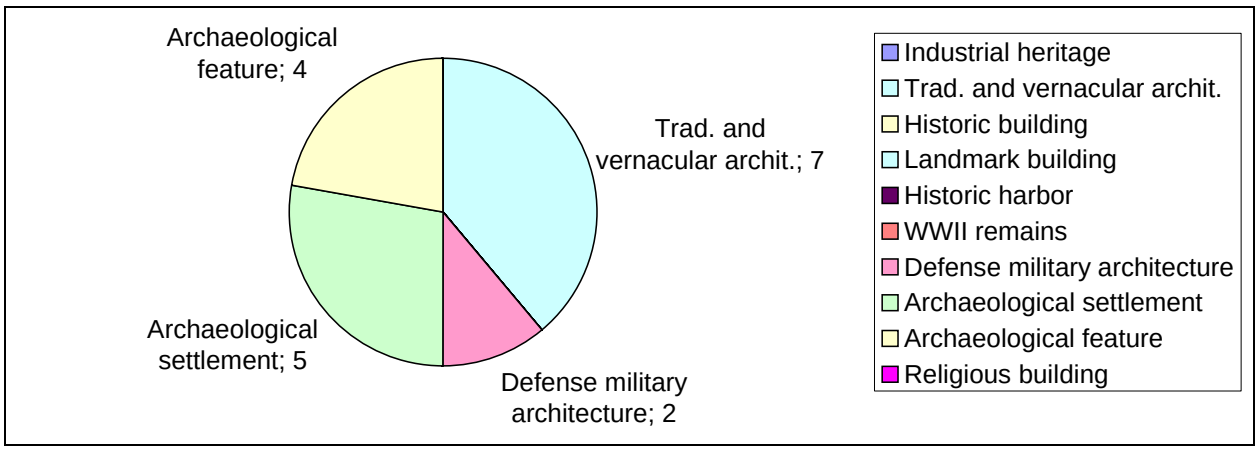



**Figure 17: Relative proportions of Naqoura's heritage resources**

Compared all together, the distribution of the heritage resources by type and municipality is presented in the following figure.

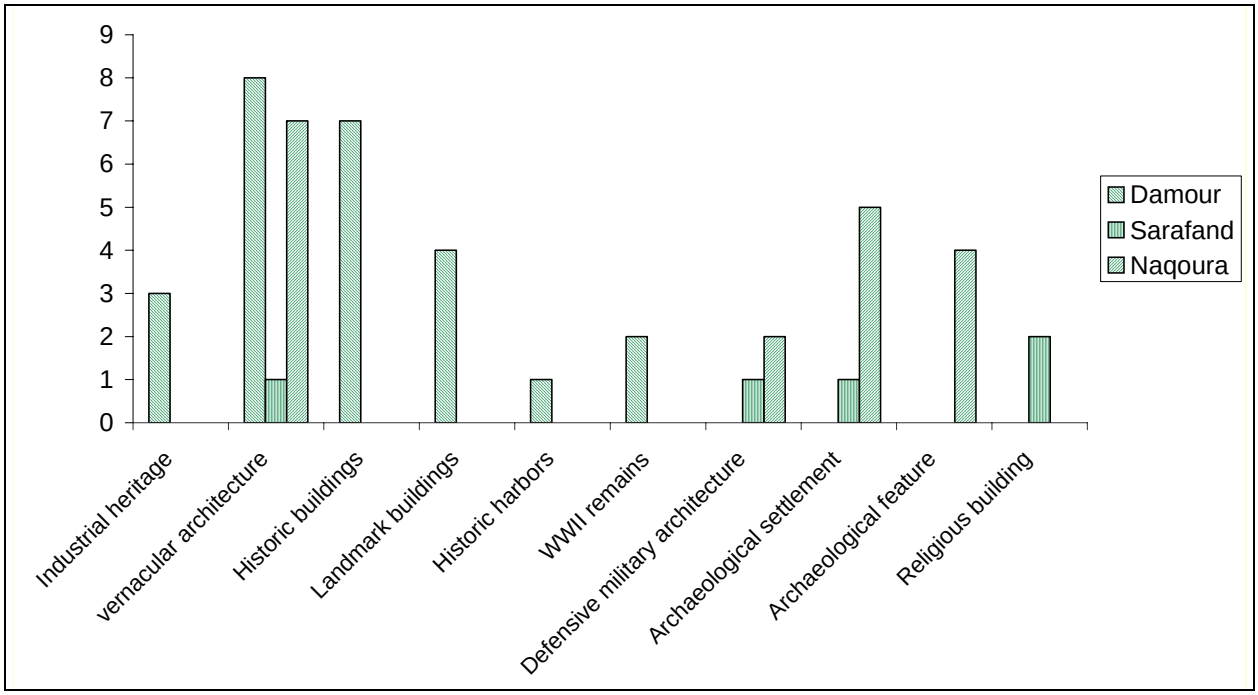



**Figure 18: Comparative graph of heritage types between municipalities**

## The Heritage of Damour

*Characteristics of the cultural resources*

The heritage resources of Damour are linked to the development of the locality and the events that shaped its historical background. Accordingly, they could be grouped under the following types:

- *Historic Buildings:* examples of traditional Lebanese residential architecture closely linked to the industrial prosperity of Damour and to the development of silk trade with the West. Rich industrialists and property owners commissioned the construction of fine examples of traditional mansions and large houses in the 19th and early 20th century some of which have survived until this day but are nonetheless suffering from neglect and unsympathetic repairs and alterations. Prior to the events of the Lebanese civil war, the architectural heritage of Damour was better preserved and many houses were used as typical examples representing quality traditional architecture in Lebanon.
- *Traditional vernacular buildings:* mainly farmhouses or central hall houses typical of villages and towns with a preserved old building stock. These structures contribute to the traditional and rural character of Damour and provide the tangible links with the past. Preserving them will help maintain these links and improve the quality of the living environment while providing the necessary setting for the development of scenarios related to cultural tourism development within the town of Damour.
- *Industrial heritage:* the surviving few testimonies of the vivid silk industry and trade, which brought prosperity upon Damour during the 18th and 19th centuries. The few surviving remains of silk and glass factories are important landmarks and the tangible evidence of a once thriving economy and a prosperous trade which was not only limited to Damour but to other localities on the coast (such as Beirut for example) and in the Shouf mountains.
- *World War II remains:* of national and international significance linked to the military history of the area and to the events which opposed the armies of Vichi and the Commonwealth forces joined by the army of De Gaulle. These remains are of monumental character consisting of long stretches of waterfront fortifications and installations carved inside the mountain at the site of the fortress known as “al-Hosn” in the al-Hamra locality.

**Photo 68:**
**Remains of silk factory at Damour. The building maintains the links with the town's important industrial past**

- *Surviving old traditional crafts:* mainly ceramic productions based in two locations along the highway to the south. These productions are very similar to traditional ceramic wares that were in use for centuries and are characteristic of the material cultural of the coastal area during the middle ages. Other surviving characteristic crafts are the productions of baskets and reed matrices; these can play an important role in the development of tourist gadgets and products.
- *Artisanal gourmet:* in particular, the artisanal home made production of marzipan and Keshek. Such productions can contribute to the integration of the household into the tourism industry and can provide special gastronomic products that support it.

*Assessment of the cultural significance of Damour*

Broadly speaking, Damour's main values can be summed up to:

- *Natural attractiveness of the place:* The cultural wealth of Damour juxtaposed with the natural beauty of its coastal line including beaches and plantations have created a setting where man can reflect upon his past and interact with the physical and historical legacy of the area. The sea and the coast, together with the river and its surroundings, provide Damour with picturesque scenery of aesthetic and natural value. This is emphasised by the fact that the coast still preserves a relatively unspoiled and authentic natural character despite the fact that beach sand has been heavily quarried in the past.
- *An important industrial heritage*: The silk factories of Damour are important reminders of the town's industrial history and achievements. Damour was well known in the 19th century for its silk production and trade, not only with neighbouring countries but also with the West. The industrial heritage of Damour survives somewhat melancholically in the remains of two ruined silk factories which testify to the past prosperity and richness of the area.
- *Important engineering feats and landmarks*: Dating back to 1815, the construction of Damour's bridge involved a cost of 100,000 piastres (a sizeable sum at that time) and required 150 master masons. This reference gives us an idea about the social and economic importance the place once had in the past. Damour's bridge is also significant to illustrate the glory of the local Emir Bachîr, who ordered its construction, together with several other public works. Emir Bachîr, followed the example of Asaad Pacha al-Aazem, whose 14 year ruling mandate was marked by the undertaking of several public works including a splendid palace and a commercial khan among others in Damascus. In 1806, the glory of the emir was further emphasised by the construction of his palace at Beiteddine. The bridge that we now see over the Damour river replaced the original bridge built by the Emir; it dates back to the French Mandate period.

  The old aqueduct of Damour is contemporary with Emir Bachîr's building works in the area. This landmark feature supported the economy of Damour at that time. It was not only used to provide water to the area's agricultural lands, but also to its industrial facilities, namely the silk and glass factories. Although part of the aqueduct is in bad condition with some large sections rebuilt using cement blocks, in other areas it is in fairly good state requiring only some cleaning and maintenance.
- *Outstanding examples of fine historic buildings and traditional vernacular architecture*: Damour still preserves some fine and unique examples of historic buildings reminiscent of a period of economic prosperity associated with the development of silk trade. These buildings maintain the sense of place and depict a fine level of craftsmanship characteristic of that period.

These architectural examples strongly contribute to the authentic character of the area. It is, therefore, of paramount importance to ensure that their natural character and that of their

immediate surroundings are maintained and preserved. Modern unsympathetic repairs and the use of inadequate materials are seriously threatening the authenticity and integrity of these structures.

- *A place with international significance linked to its past military history*: The fact that Damour incorporates WWII remains such as a large waterfront fortification wall and installations cut in the mountain at the location of al-Hosn (al-Hamra area) testifies to the strategic importance of the place and the location where French forces under Vichi and Commonwealth armies fought the fiercest battles in Syria for the control of the region. The WWII remains incorporate as well the memorial to a French soldier visited lately by representatives of the French Embassy and members of his family.

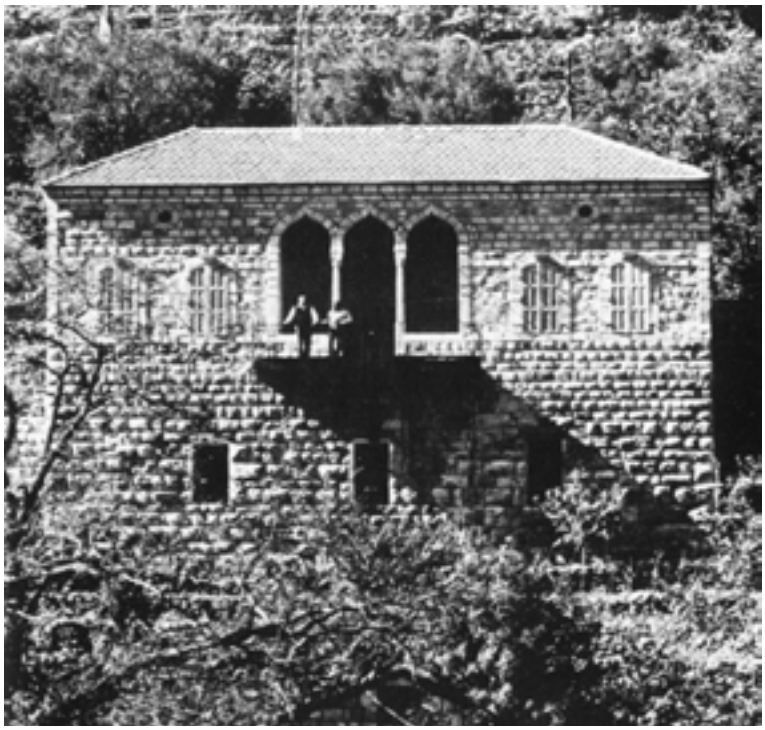


**Photo 69:**
**Example of fine traditional architecture from Damour. Example from before the civil war**

*Assessment of the condition of the cultural resources of Damour*

Assessing the condition of the cultural resources of Damour helps identify the needs and requirements of the preservation of the resource in the context of management as well as reveals the range of practices that can be incompatible with conservation.

**Table 34: Assessment of the condition of the cultural resources of Damour**

| Heritage resources | State of preservation and condition |
|---|---|
| **Silk factories** | Very bad, continuous decay and loss of fabric due to exposure to the weather without any provision for maintenance or conservation. |
| **Glass factory** | Very bad, building collapse and erosion of fabric. Unsympathetic use of part of the structure. |
| **Vernacular and traditional architecture** | Bad, due to neglect, lack of maintenance and unsympathetic repairs and additions. |
| **Historic and landmark buildings** | Bad to stable, due to neglect, lack of maintenance, abandonment and unsympathetic repairs and alterations. |
| **WWII remains** | Bad, due to lack of maintenance, regular truncation and loss of sections through construction activities, deliberate destruction, etc. |

Based on the assessment of the condition of these resources, a number of interventions are necessary in order to plan for their conservation.

**Table 35: Proposed actions/interventions**

| Heritage resources | Proposed actions/interventions |
|---|---|
| **Silk factories** | Conservation of fabric and provision for a regular program of maintenance supported by the introduction of new uses to these structures. Interpretation and presentation of the remains to the public. |
| **Glass factory** | Excavation of collapsed remains, conservation of fabric and presentation of structure. |
| **Vernacular and traditional architecture** | Regular maintenance and removal of harmful additions. Adaptive reuse of abandoned structures. |
| **Historic and landmark buildings** | Conservation of features and regular maintenance. |
| **WWII remains** | Protection, conservation and maintenance of structures. Presentation to the Public in the context of an overall heritage management plan. |

The five main key issues that must be dealt with in the proposals for the integrated management of these resources are:

- extending protection to the resources of the place;
- conserving the existing resources;
- providing for regular maintenance of the resources based on proposals for adaptive re-use or presentation;
- enhancing the quality of the heritage resources, increasing people's appreciation and enjoyment of their heritage;
- making sure that the management of these resources is carried out in a sustainable way and that local economic benefits are extracted from the use of these resources in a sympathetic and sustainable manner.

Accordingly, management proposals for the cultural resources of Damour should try to accommodate these needs within the existing constraints and the available opportunities.

*Management policy for Damour*

Any management policy for the town of Damour should be largely based on the conservation and enhancement of the place's cultural and natural heritage. Any enterprise or activity that does not guarantee the sustainability of the available resources of Damour's area constitutes a direct threat to its natural and cultural potential. The overall management policy for Damour should aim at conserving and enhancing the values of the place as outlined in the significance assessment. This is achieved through:

- providing legal or administrative protection to the cultural resources of the place and its natural setting;
- ensuring that development needs are balanced with the need to conserve the cultural heritage of Damour;
- making sure that the process of decay and erosion of the cultural features is slowed down to an acceptable minimum;
- encouraging the formation and training of local inhabitants in the management of the resources;

- producing interpretative and presentational material to increase visitor satisfaction and education;
- providing the necessary infrastructure for the development of cultural and eco-tourism in Damour making sure that benefits from this industry spread across the local community.

*Strategies for implementing the management policy*

The management policy or plan should contemplate the way in which its implementation will affect the significance and setting of the resources concerned. Ideally, Damour should attract that kind of visitors that can satisfy the economic expectations and the environmental requirements of the area, i.e., respecting not only the socio-economic structure of the place but also its community. There are a number of practices that put the management policy into implementation. Such practices are presented in the following table.

**Table 36: Practices for implementing the management policy**

| | |
|---|---|
| **Recording and documentation** | The need to document the historic buildings and landmarks, the WWII remains and industrial heritage. On-going process that could last for a long time. Its implementation requires however sufficient funds and the right expertise, the DGA as well as external funding agencies can contribute to the implementation of this task. Special training can be provided to local volunteers in order to assist in this task. |
| **Conservation of the resources** | Conservation of the cultural remains, some require serious consolidation works such as the silk factories, while others only need maintenance works such as the aqueduct. Financial commitment from the Municipality over a long period of time and the contribution of the local inhabitants in terms of volunteer labour and funds can be decisive in this case. |
| **Extending legal protection** | Applying for the listing of major historic buildings and landmark buildings such as the aqueduct as well as the WWII remains and the silk factories. The Municipality should apply to the DGA for listing and should make sure that development does not affect the heritage resources negatively, consequently, there is a need to apply planning restrictions in some cases. |
| **Control of impinging development** | Through the provision of buffer zones, landscaping, planning regulations etc. |
| **Encouraging research** | Research into the industrial history of the town and the WWII history of the area. This can be undertaken by interested historians or students supported by the municipality. |
| **Visitor information and management** | Upgrading sites to allow for visitor access and education, providing for visitor indications, brochures, maps and panels at the main intersections, access ways, as well as at the WWII remains, the Khan and the harbor. Visitors should benefit from a visitors' centre if they are to understand how to visit the town and enjoy the cultural and eco-tourism offer. |
| **Building capacities** | Providing training sessions for staff that will care for the preservation and management of the resources of the place, such as the silk factory, a potential visitors' centre, the WWII remains. This can be implemented with national and international agencies' support and training. Such programs can be organised through the DGA and in co-ordination with organisations such as UNESCO. |

*Visitors' scenarios*

Damour and its area enjoy great cultural potential, however, if we are to attract visitors to the place (both in the short and long terms), the mere construction of tourist complexes or resorts is not a solution nor is it desirable. Damour cannot (and should not) compete with hotels and other tourist facilities of nearby towns, specially bearing in mind that Beirut is only a quarter of an hour away from it. If we are to attract visitors to the area, this needs to be done in an intelligent and creative way, Damour as a cultural and natural attraction needs to be offered to the people as a *servuction* of facilities, information, interpretation, animation and other

amenities. The key piece to ensure the success of any development strategy for a place is to provide visitors with a *differential offer*, something they can see and do in the area which is not available elsewhere.

Some of Damour's cultural heritage provides great opportunities for adaptive re-uses which could have positive effects on the community's sense of well-being and pride but also on the area's economy. Furthermore, it is important to keep in mind that adaptive re-use of cultural resources can strongly contribute to the place's enhancement through the re-investment of part of the generated funds in the conservation and rehabilitation of these resources; we are talking here mainly of the historic and vernacular architecture types.

Open spaces such as some sections of Damour's aqueduct, provide great locations for activities like local gastronomy, handicraft fairs and markets or for the organization of punctual art events. Such events represent important tourist attractions; they help bring heritage and traditions closer to the people, and if well managed, are excellent promotional means to make the area known. They also have very positive effects on local communities in terms of economic profits, strengthening of civic identity and local sense of pride, etc. Providing that maintenance and cleaning regimes are established and strictly implemented, the impact of such events on the heritage resources is minimal and can be easily monitored.

Some of the historic buildings situated in the centre of town could become ideal community or cultural centres. But Damour has already a big architectural potential which could be used in the context of an open-air museum of buildings, where people go on promenades within the city, either on foot or on bicycles to contemplate the various examples of historic and vernacular architecture.

In addition to this, the well-maintained beaches of Damour can provide a recreational and relaxation space, which should be available to all inhabitants and visitors and not be restricted to the customers of beachside complexes.

These examples would not only attract visitors to the place and promote the area, but would, at the same time, integrate the remains into local people's daily lives ensuring the sustainability of the place's development by guarantying the survival of its cultural and natural resources. Such examples of sympathetic development should start a mechanism that will involve a large size of the population in the process of conservation and management and make sure that extended benefits are equitably shared among the local community.

## The Heritage of Sarafand

*Characteristics of the cultural resources*

The heritage resources of Sarafand are related to the archaeological and the religious legacies of the place:

- *Archaeological heritage:* the ancient tell of Sarafand dates back to at least the Bronze Age period and consists of an accumulation of settlements of several periods. This mound represents the urban history of Sarafand from ancient times. The Phoenician period is represented and can as a result play a significant role in the development of associated cultural products for boosting local identity and tourism.
- *Religious tradition:* Sarafand is a place with an important biblical tradition linked to the passage of Jesus Christ and Virgin Marry to the town. It is also related to the presence of a shrine dedicated to the Muslim Jurisprudent Abu Zar al-Ghafari and the mosque which commemorates the religious significance of the place.
- *Defensive military architecture:* associated with the Crusader-Arab defensive tower that guarded the coast of Sarafand from sea attack in the medieval period.

**Photo 70:**
**Traditional glass manufacture at Sarafand. A surviving craft with a high historical significance**

- *Surviving old craft and industry:* in particular the glass industry with its roots in high antiquity. The Phoenician coast was famous for the quality of its blown glass since ancient times and well into the medieval period. Glass industry at Sarafand is an important local tradition which continues until this day and is unique in the area. It is currently flourishing as a artisan production but the trade is handled only by one family consisting of a master glass-maker and his apprentice son. The rest of the family helps in support activities around the workshop.
- *A famous location for fish-related tasting:* renowned for its fish-cuisine, Sarafand is second to Khayzaran in its delicious fish-related cuisine. Restaurants in the town need nevertheless to be upgraded and the inhabitants and local authorities should spend more efforts on reviving and marketing their culinary tradition and cuisine.

*Assessing the cultural significance of Sarafand*

Located 28 km north of Tyre, Sarafand is the site of ancient Sarepta, mentioned in the Bible. References to Sarepta in ancient literary sources confirms the existence of this important city during the late Bronze and Iron Ages, and occasionally provide clues to its relative size and significance among the city-states of the Phoenician coast.

Sarafand's main values can be summarised to the following:

- *Religious significance:* Modern Sarafand is the biblical Zarephath, later known as Sarepta. The place is famous for the two miracles performed there, in the ninth century, by prophet Elijah in reward for the hospitality shown to him by a widow of Sarepta. The miracles, the resuscitation of the widow's dead son and the multiplication of her olive oil and grain supplies are accounted for in the biblical text of the Book of the Kings 17: 8-28. In it there is specific mention to the "gate of the city". In the miracle of the flow of oil in the time of famine, one can see a reflection of the reputation the city of Sarafand had at the time for the production of this vital commodity. During Crusader times, the town was the seat of a bishopric, home to a Carmelite order and had a Crusader church commemorating St. Elijah in its centre.
- *Historic continuity:* Archaeological evidence revealed that Sarafand was first occupied in the middle of the second millennium BC, eventually becoming an important trading town and remaining a powerful coastal town throughout antiquity. During the Crusader period, Sarepta, as it was then called, was a large, well-fortified town with an important castle. The place has been continuously inhabited since it was first settled in antiquity.

- *Archaeological importance:* Sarafand has little, yet very important, archaeological remains, testimonies of the place's rich historic heritage. Unfortunately, most of them are in bad condition or ravaged by modern development. Among them are traces of the old port, the ruined Phoenician masonry of houses and cisterns visible on the shore, the remains of the place's Crusader castle and the tell, accumulation of settlements of various dates. Besides these, the town has important religious and residential buildings such as:
  - The shrine of Abou Zar al-Ghafari, an important Muslim jurisprudent who taught there in the first century of Hijra.
  - Residential buildings of traditional vernacular architecture dating back to the early 20th century.
  - The mosque of the Prophet al-Khodr, originally a Medieval building although nothing much of its old structure remains nowadays. Nevertheless, the religious significance of the place is still very strong.
- *Trading centre:* The town of Sarafand was well known in Phoenician-Roman times for its glass industry, which made the place famous as an important trading post. It is believed, in fact, that the town took its original name from the word *seraph* which means "to melt" in Hebrew.
- *Survival of ancient crafts:* The glass-making industry for which Sarafand became so famous in Phoenician and Roman times survives until this day. The modern town has a workshop where glass blowing is performed and where a master glass maker and his family produce high quality glassware just as his Phoenician ancestors did thousands of years ago. The workshop is the only surviving centre for glass production in the country; a uniqueness that emphasises even further the significance of the historic craft.
- *Natural beauty of the place:* Despite of Sarafand's uncontrolled urban development and the poor condition of the archaeological mound, one can still find some attractive unspoiled spots in town. The remains of the Crusader watch tower, reminiscent of the warfare period between the Franks and the Arabs, is a good example situated on a steep promontory overlooking the sea.

**Photo 71:**
**Aerial photo of Sarafand archaeological mound prior to its partial destruction by modern development and intensive agricultural activity**

*Assessment of the condition of the cultural resources of Sarafand*

The heritage resources of Sarafand suffer from a number of serious problems, which require some urgent measures.

**Table 37: Assessment of the condition of the cultural resources of Sarafand**

| Heritage resources | State of preservation and condition |
|---|---|
| **Defensive military architecture** | Very bad, continuous loss of fabric and collapse of structure. |
| **Archaeological mound** | Very bad, the site is constantly getting truncated and ravaged by modern development and unsympathetic plowing. Moreover, access to the centre of the old excavation is causing regular abrasion and erosion of the surface of the mound. |
| **Vernacular and traditional architecture** | Very bad, due to neglect, lack of maintenance and unsympathetic repairs and additions. |
| **Religious buildings** | Bad to stable, due to demolition of old parts and new building. |

Based on the assessment of the condition of these resources, a number of interventions are necessary in order to plan for their conservation.

**Table 38: Proposed actions/interventions**

| Heritage resources | Proposed actions/interventions |
|---|---|
| **Defensive military architecture** | Structural consolidation and conservation of fabric; provision for a regular program of maintenance. The significance of this type of architecture can be improved by staging a limited salvage excavation particularly at the site of the Crusader-Arab tower. |
| **Archaeological mound** | Protection of perimeter, removal of harmful vegetation and conservation and presentation of the exposed remains. |
| **Vernacular and traditional architecture** | Repair and improvements using traditional materials and methods. |
| **Religious buildings** | Repair and improvements using traditional materials and methods. |

The five main key issues that must be dealt with in the proposal for the integrated management of these resources are:

- extending legal protection to what remains of the cultural resources;
- conserving the few remaining attractions;
- providing for regular maintenance of the resources based on proposals for adaptive re-use or presentation;
- enhancing the quality of the heritage resources, increasing people's appreciation and enjoyment of their heritage; and
- making sure that the management of these resources is carried out in a sustainable way and that local economic benefits are extracted from the use of these resources in a sympathetic and sustainable manner.

Accordingly, management proposals for the cultural resources of Sarafand should try to accommodate these needs within the existing constraints and the available opportunities.

*Management policy for Sarafand*

Based on the special character of Sarafand and the nature of its cultural resources, it seems that the main policy for managing the heritage is:

- providing legal and municipal protection to the archaeology and the deposits that survive intact;
- enhancing the quality of the religious legacy and heritage and develop themes for interpretation and presentation to visitors;
- make sure that the traditional glass industry and craft remains alive and well sustained.

*Strategies for implementing the management policy*

The management policy specified above requires a set of practical measures and strategies for its implementation. These have been detailed in the following table.

**Table 39: Practices for implementing the management policy**

| | |
|---|---|
| **Identifying what remains of the archaeology of the mound** | The archaeological tell or mound of Sarafand enjoys high significance which is currently undermined by uncontrolled building and the piece-meal destruction of the site by new development and the construction of an asphalt road that truncated large sections of the mound. Delimiting the extent of the archaeology is an important task that needs to be undertaken in order to assess what is feasible in terms of management of the site. |
| **Conservation of the resources** | Very little remains of the traditional architecture and historic buildings at Sarafand. Nevertheless, a program of regular maintenance of the surviving traditional buildings is needed. |
| **Extending legal protection** | Legal protection should be provided to the archaeological remains of the mound in order to halt further aggression. |
| **Encouraging Research** | Research at the archaeological mound of Sarafand started in the seventies under the form of scientific excavations. There is a need to re-evaluate the archaeology in order to better understand the importance and significance of the place. |
| **Visitor information and management** | Upgrading the archaeological mound and the water front are possible tasks that need to be undertake to raise the quality of the environment at these particular locations. |
| **Building capacities** | Providing training sessions for staff that will care for the preservation and management of the resources of the place, such as the archaeological park and the religious heritage. |

## The Heritage of Naqoura

*Characteristics of the cultural resources*

Naqoura's heritage resources are mostly archaeological; in this case, the wealth of archaeological remains is substantial particularly in the areas to the north of the town of Naqoura. Other types are historic town core and the surviving fishing trade.

- *Cultural landscape:* mainly, the cultural landscape stretching from Naqoura and beyond it to the border and extending north as far as Khirbet Iskandarouna and Chamaa. The area is rich in archaeological remains consisting of ancient olive oil production complexes with settlements and ancient agricultural plots in the vicinities. The area falling within the municipal boundaries incorporates the sites of Umm al-Amad and Umm al Aafayye.
- *Old town core:* the remaining few vernacular houses give some coherency to the historic core; they are characteristic of rural architecture which must be preserved.

**Photo 72:**
**Natural unspoiled landscape in the immediate surroundings of Naqoura**

- *Surviving fishermen's trade:* a large contingent of fishermen is still active at Naqoura. They maintain alive the ancient tradition of fishing that is closely linked to the historical legacy of the place.
- *Defensive military architecture:* associated with the Crusader-Arab defensive tower that guarded the coast of Naqoura from sea attack in the medieval period.

*Assessing the cultural significance of Naqoura*

Due to the special circumstances of Naqoura's area, with its long period of occupation and isolation from the rest of the country, the place still suffers greatly from lack of resources and years of neglect. On the other hand however, due to this isolation, the area is still unspoiled and enjoys a special local character and 'sense of place' quite unique in the whole country. The natural beauty of the area coupled with its archaeological richness gives the place aesthetic and appealing values.

Naqoura's main values can be summed up to the following:

- *Uniqueness of the cultural landscape:* The cultural landscape of Naqoura's and its surroundings (i.e., from Iskandarouna to the southern border of Lebanon, including the site of Oumm el'Amed) is rich in ancient settlements dating back to the Phoenician period. This period is associated with a rich culture and religious beliefs as well as a developed urban history and trade. The ancient cyclopean and monumental remains of the area are juxtaposed with the outcropping vegetation and the beauty of the natural setting with the clear sea in the background. In addition to that, the fact that the place is still unaltered by modern unsympathetic development contributes highly to enhance the beauty of the region.

  Naqoura's cultural landscape is unique because it represents a material culture recognised universally for its contributions to the history and development of human civilisation, either through the propagation of the alphabet, or through its strong commercial relations with Mediterranean cities. The continuous settlement history of the area from the Phoenician to the Byzantine period and the fact that it is the only still preserved ancient landscape of its kind in Lebanon with monumental remains such as temples with Doric capitals and Churches with Byzantine mosaics increases the significance of the place and its historical, cultural and scientific values.

**Photo 73:**
**The old town core in Naqoura has potential for rehabilitation and re-adaptation**

- *Important archaeological evidence:* The discovery of Phoenician stelae and inscriptions at the site of Oumm el 'Amed, in the vicinity of Naqoura, sheds light on the nature of Phoenician religion as well as on the development of the alphabet through time.
- *Crusader military towers:* There are two Crusader watch towers within Naqoura's area. One is located in Iskandarouna and the other in the town of Naqoura (inside the UN camp). Both sites offer great potential for interpretation and presentation to visitors. They are also significant as historic witnesses of the chain of watch towers which were situated all along the coast and used as early warning posts.
- *Archaeological richness:* Naqoura and its surroundings constitute an archaeological landmark of outstanding importance, not only because of the cultural significance of the archaeological sites but also for the rich and wide variety of the remains. In addition to the vast archaeological settlements, the area has two watch towers from the Crusaders period, funerary caves, rock shelters (some of them possible prehistoric), ancient olive press complexes and some beautiful examples of traditional vernacular houses and agricultural farms.

**Photo 74:**
**The archaeological site of Umm al-Amed prior to its excavation in the 60's**

- *Potential for adaptive re- uses:* Some of the old residential buildings within Naqoura's town and agricultural farmhouses located on its immediate vicinity provide great opportunities for adaptive re-uses such as tourism lodgings. Naqoura's rural setting and beautiful landscape offer great opportunities for alternative tourism such as rural or cultural tourism. It is important to keep in mind that tourism can act as the driving motor for

economic development, especially in rural areas such as the case of Naqoura, and can strongly contribute to the enhancement of the social, economic, cultural and environmental development of an area. Tourism has the potential to create beneficial effects on the natural and cultural environment it occurs by contributing to environmental protection and conservation. It is also a way to raise awareness of cultural and natural values and it can serve as a tool to finance protection of natural and cultural resources and increase their economic importance.

- *Natural attractiveness of the area:* Naqoura's mix between rural and coastal settings coupled with the place's rich natural and cultural landscape, provide the area with scenery of great beauty and aesthetic value. The fact that the area still preserves an unspoiled and authentic local character just adds to this appealing value.

*Assessment of the condition of the cultural resources of Naqoura*

The general condition of the heritage resources of Naqoura and its area is stable; this is due to limited development that took place in the area because of the Israeli occupation. Nevertheless, many issues face the preservation of the resources and threaten their integrity and conservation

**Table 40: Assessment of the condition of the cultural resources of Naqoura**

| Heritage resources | State of preservation and condition |
|---|---|
| **Cultural landscapes** | Stable, but piece-meal destruction of archaeological remains goes unchecked, particularly in the area of Iskandarouna where construction works threaten to destroy a large part of a classical period settlement. |
| **Old town core of Naqoura** | The core of the town is neglected; many old vernacular houses are obsolete and suffer from major structural problems and collapse of fabric, not to mention the potential threat of demolition for re-building. |
| **Defensive military architecture** | Depicted in the Crusader-Arab tower of Naqoura. The building is in stable condition but structural collapse has occurred in the past and the structure is exposed to weather action and water penetration into the fabric. The archaeological mound underneath the tower is suffering from erosion of its section and from continuous excavation through the digging of graves in the cemetery. |

Based on the assessment of the condition of these resources, a number of interventions are necessary in order to plan for their conservation.

**Table 41: Proposed actions/interventions**

| Heritage Resources | Proposed actions/interventions |
|---|---|
| **Cultural landscapes** | What is required to maintain the integrity of these landscapes is a detailed inventory of the entire area so as to clearly identify the extents and limits of the landscapes so rich in terms of its natural and archaeological potentials. |
| **Old town core** | A comprehensive plan for conserving and rehabilitating the traditional building stock within the core of the town is necessary so as to create a mechanism for their preservation and adaptive re-use. |
| **Defensive military architecture** | Repair and improvements using traditional materials and methods, consolidation of the exposed section of the mound and provide an alternative location for the expansion of the cemetery. |

The five main key issues that must be dealt with in the proposals for integrated management of these resources are:

- extending legal protection to the cultural landscapes in the area;
- conserving the old traditional town core through a comprehensive plan for its rehabilitation;

- conserving the Crusader-Arab defensive tower and area;
- enhancing the quality of the heritage resources, increasing people's appreciation and enjoyment of their heritage;
- making sure that the management of these resources is carried out in a sustainable way and that local economic benefits are extracted from the use of these resources in a sympathetic and sustainable manner.

Accordingly, management proposals for the cultural resources of Naqoura should try to accommodate these needs within the existing constraints and the available opportunities.

*Management policy for Naqoura*

Based on the special character of Naqoura and its area and the nature of its cultural resources, the appropriate policy for managing the heritage should be the following:

- provide legal and administrative protection to the cultural landscapes across the area;
- enhance the quality of the living environment within the town core;
- make sure that the old trade of fishing is sustained.

*Strategies for implementing the management policy*

The management policy specified above requires a set of practical measures and strategies for its implementation. These have been detailed in the following table.

**Table 42: Practices for implementing the management policy**

| | |
|---|---|
| **Inventorying the existing cultural landscapes and their geographical extents, providing special protection to these resources** | The extent of the cultural landscapes around Naqoura and across the area from the border south to Ras al-Biyyada north and eastwards beyond Chamaa needs to be accurately identified. Because of the uniqueness and high significance of this area on a national and international scale, there is an urgent need to extend protection over these resources in the context of a special natural and cultural reserve or through the enforcement of rigid and monitored planning regulations. Such a task can only succeed if there is consensus and close collaboration between the municipalities of the area, the Ministry of environment and the Ministry of culture. |
| **Conserving the archaeological heritage** | Some urgent measures of fabric conservation are needed to stop the decay and erosion of exposed archaeological remains such as the ones at Oum all-Amad and the tower of Naqoura. These measures should be first identified in the context of an overall management plan for the resources of Naqoura with an identification of the legal and financial requirements to establish the aims. |
| **Upgrading the quality of the living environment within the town core of Naqoura** | A special rehabilitation plan for the old core of Naqoura should be drafted in order to first identify the potential for regeneration, whether it is via rural tourism development, community empowerment, etc. The Directorate General of Urban Planning can be asked to commission such a study. Otherwise, a study of this kind can be provided as part of the ongoing collaboration between the municipality of Naqoura and the Italian government. The outcome of the study could be the development of a community activity area within the core including a public library, a cultural centre and a community gathering centre. |
| **Encouraging research** | Research is needed in order to identify the nature and extent of the cultural landscape around Naqoura as well as the significance of these resources. Archaeological excavations can be an option to draw more attention to the area and highlight the significance of the remains there. |
| **Visitor information and management** | The area has great potential in the context of an open cultural park with archaeological and natural attractions; it could become a primary visitor destination that needs a sustainable approach for its management. |
| **Building capacities** | Providing training sessions for staff that will care for the preservation and management of the resources of the place, such as the archaeological park. |

*Visitors' scenarios*

One of the most significant scenarios linked to visitors' management in the area and the development of cultural and eco-tourism could be the creation of an open-air cultural park with natural and archaeological attractions extending from the southern border to Ras al-Biyyada. This could be achieved through the designation of the area a cultural and natural reserve, or through the application of strict planning regulations in the context of a comprehensive and sympathetic master plan. The provision for tourist lodgings of the Bead and Breakfast type could be partly in Naqoura and partly in the towns and villages further east such as Aalma al-Chaab or even Chamaa.

The sites of the tower of Naqoura, Oum al-Amad and Oum al-Aafaye are already accessible archaeological attractions which require nevertheless comprehensive management plans and proposals for visitors' centres and a regional museum.

## The Heritage of CAMP

The resources that were identified in the context of the project but outside the municipalities are large ancient settlements or archaeological mounds situated close to the sea. These sites are representative of the history of the coast and associated settlements that developed there since ancient times. They are particularly significant to the Canaanite and Phoenician history and material culture of the times that spread along the eastern coast of the Levant and included large parts of Syria and Palestine, not to mention its widespread expansion and colonisation of lands in the western Mediterranean.

The settlement history of these sites extends in most cases into the medieval period and is therefore linked to the close historic legacy of the area and its inhabitants. Because of chaotic, haphazard and unsympathetic development and planning along the coastal strip of the country, many highly significant sites have completely disappeared or were largely damaged by modern activity. Khaldeh and Jiyye are just two examples of such important settlements. Their identification in the context of the CAMP project is mainly intended towards assessing their condition and providing management proposals for their protection and sympathetic use, while enhancing and exposing their significance.

**Table 43: The heritage of CAMP**

| Archaeological site | Condition | Management concerns |
|---|---|---|
| Khaldeh | Site is in bad shape, it requires cleaning and consolidation of exposed features, backfilling of large pits | The site has been lately granted to the Lebanese University as a training site for archaeology students. An initial management plan of the site is nevertheless required in order to assess condition and priorities interventions in research and conservation. |
| Jiyye and Nabi Younes | Bad, gradual loss of archaeological remains through unsympathetic development | The site is witnessing a piece-meal destruction of its archaeological remains through the execution of a major project for the construction of a tourist marina and resort. |
| Tell Brak | Stable | Currently, the excavation site of the American University of Beirut archaeology department in collaboration with the University of Tuebingen. There is potential for presentation by an initial brief for conservation planning still needs to be put together |

*Developing the cultural potential of CAMP*

The CAMP area enjoys a large cultural potential, which is mostly the result of its particular coastal geography. In fact, the coastal areas of Lebanon have been continuously inhabited since prehistoric times; the wealth and diversity of cultural places, historic features and traditions as

well as archaeology is substantial. Despite the damage caused by uncontrolled development in the past, which has led to the loss of many cultural resources in the various coastal villages and localities, a lot remains so as to preserve the local and traditional character of the area as well as contribute to its sustainability and development via cultural and environmental tourism.

The cultural resources of the area are largely concentrated in and around historic towns and cities, like for example Sidon and Tyre. But all along the coast one can spot a large number of cultural sites and attractions, which could, if developed and managed properly, form a network of cultural attractions on the basis of which the tourism industry can thrive. In general, the cultural attractions one can find in the CAMP area are of the following types:

- Ancient settlements located on the coast and constituted of a superimposition of ancient cities one on top of the other like in the case of Sarafand, tell el-Burak, tell el-Maashouk near Tyre, etc. These settlements have yielded and can still yield remains from the Phoenician, Hellenistic – Roman, and Medieval periods and are to be considered very important cultural resources for the future.
- Roman and Byzantine period temples and sanctuaries with important mosaics and monumental architecture. These complexes are scattered along the CAMP area but also largely concentrated in the Naqoura area like for example the sites of Umm el-Rabb and Umm el-Amad, or the complex of Chhim and Eshmoun.
- Historic quarters and traditional vernacular architecture scattered throughout the various settlements in the CAMP area. These features give a special flavour to the place and maintain its historic and traditional character alive. They are also important resources that will support the development of a cultural tourism industry revolving around medium income tourists seeking to enjoy the local culture by living in traditional houses and participating in traditional local activities.
- Old industries and crafts that play the role of important attractions. In this case we can name traditional silk and glass productions at the centres of Sarafand and Damour.

## Role of Government Institutions in the Conservation and Management of CAMP Cultural Heritage

The protection and management of the cultural resources of Lebanon is the responsibility of the Directorate General of Antiquities, originally under the Ministry of Tourism but currently under the Ministry of Culture. The administrative structure of the Directorate has not significantly changed since the 1970's and it is currently very difficult for this institution to carry out its mandate and cope with the growing demands of cultural resource management without a significant change and increase in its technical staff. Although administrative change is slow procedure within the Lebanese administration, plans are currently prepared for improving the structure of the Directorate and empowering its staff through fresh certified recruits.

Meanwhile, the other impediment to proper cultural resource management is the current law of antiquities which dates back to 1933 and is a hybrid of the old French antiquities' law. This law, needless to say, is outdated and many regulatory instruments that are now necessary for protection, conservation and management of heritage were at that time not provided. An attempt has been made lately by the Ministry of Culture to draft a new antiquities' legislation, but the process has so far been slow, not to mention the fact that the legislation has not yet been assessed and verified by the wider expert community.

The current conditions governing the management of the cultural resources of Lebanon have been widely disfavoured by the war years as well as by a backlog in research, conservation and management for decades. This has been accentuated by the lack of a vision and strategy for managing the cultural resources as well as a serious drop in maintenance and preservation

projects. Today, a few projects are being commissioned by the Directorate of Antiquities as a response to urgent intervention needs and priorities. In addition to these, there has been an active development of foreign aid and grant projects to safeguard the heritage of the country and develop its management and use for the benefit of society. Such projects are mainly funded by the World Bank, UNESCO and the European Community. Although limited in scope, their impacts on the development of a management approach and short term vision at the Directorate of Antiquities are quite significant whereby responses to critical issues in management are now based on previous experience as opposed to arbitrary subjectivity. It is hoped therefore that the implementation of such projects will help build an infrastructure for sustaining heritage management in Lebanon, but the key issue that remains to be addressed is the empowerment of the institution responsible for caring for heritage locally through a national government strategy that recognises the central role heritage has to play in determining and enriching the identity of the people and aiding its development in an increasingly normative global world.

## Conclusions

The inventory of the CAMP resources and the assessment of the various strengths and weaknesses, opportunities and threats respectively for each municipality have enabled the identification of a number of important issues that are central to the integrated management of the coastal area of CAMP. These issues relate to:

- the deteriorating condition of the cultural resources;
- the lack of legal protection for the majority of the resources;
- the lack of knowledge about the existence of sites and features of high significance and value;
- the absence of monitoring the state of the historic heritage and the rate of loss and decay;
- the lack of qualified personnel to deal with the management of the heritage resources at each municipality; and
- the incapacity of the responsible authorities to manage the resources of CAMP.

Despite of these major constraints the potential for managing the heritage in a comprehensive manner is there but requires a clear plan of action that should be drafted at the level of each municipality in co-ordination with the various local NGO's and interest groups and with the support of the concerned authorities. The potential for proper management consists of:

- The motivation of the municipality and its involvement in the management mechanism which already started with the CAMP project via the assessment of the current situation.
- The involvement of the local inhabitants and interest groups in the management of the heritage resources. In fact, the inhabitants can enter into negotiations with private property owners to get access permission and even limited usage of the heritage resources for cultural manifestations. A good example on this is the Banana festival which is organised by an interest group from Damour and intended to take place at the Silk Factory in the fields.
- The availability of volunteers to undertake limited rehabilitation works, such as cleaning cultural properties, providing guided tours and explanations, etc. thus reducing largely the need for large unavailable budgets for commissioning these works.
- Better interpretation of the local heritage and better presentation associated with the significance as depicted by the local inhabitants who have a bigger stake in their heritage.

Based on the above, it seems more reasonable to invest in the local human resources of each municipality by providing training so as to help develop a nucleus for managing the heritage resources available. It is also important that each municipality develops its own strategy for managing its heritage so that they could better plan sustainable physical and economic development within their areas.

# Tourism and Sustainable Development

## Study Objectives

The general objective of the study is to assess tourism as one of the strategic choices for sustainable development in the three municipalities. Specific objectives are as follows:

- to identify the natural resources in CAMP area and to assess conflicts and opportunities regarding their future use;
- to assess the recreational value of natural beaches in CAMP area;
- to analyse tourism planning in CAMP area (analysis of demand and supply, community involvement, carrying capacity, visitor and traffic management);
- to describe the potential of a nature-based tourism in Damour, Sarafand and Naqoura;
- to formulate recommendations for future development of tourism in CAMP area.

## Natural Resources in CAMP Area

CAMP area was analysed in relation to its natural resources, more specifically the coastal agricultural plains, the natural beaches and the wildlife.

*Coastal agricultural plains*

The coastal plains of CAMP area could be considered as the last remaining agricultural plains in the country, which are bordering the sea. Particularly, the plain of Damour presents the last largest agricultural coastal area located in the metropolitan region of Beirut, after the losses of the other plains (the region of Beirut River, Hadath, Chouyafat, Antelias) in the last 30 years. These plains have, in addition to their agricultural value, a cultural value and an aesthetic value. Preserving the current use of these plains for agriculture, would increase the touristic attractiveness of CAMP area and would preserve a national cultural heritage. The major threat for these coastal plains is their conversion into construction. Here, an economic insight is needed in order to assess the risk of this kind of future development.

The relatively low gross margin for citrus production, compared with banana production, explains the tendency in CAMP area to convert citrus orchards into banana. Taking into consideration the uncertainty of economic profits of agriculture in general and their low magnitude, the lack of governmental support and the foreign competition on one hand and the relatively high prices of land for construction on the other hand, one can conclude that, in absence of conservation-led legislation, the agricultural coastal plains will be lost in the future in favour of construction. One should keep in mind that the drastic transformation of agricultural plains located north of Beirut into construction took place during the war and continued actively after it ended in 1991. In South Lebanon, the Israeli occupation, which ended around two years ago, discouraged construction of touristic resorts and slowed down housing activities. Thus, it has indirectly preserved the natural resources from irreversible changes for more than 20 years.

In this context, after the Israeli withdrawal from the South, the threat of large "touristic" resorts along the seashores of CAMP area is evident. Investors in large resorts can afford to pay relatively high prices for the land and they do require relatively large areas, which makes it very profitable for the original owner of such areas.

One should mention that the visual pollution resulting from resort construction on agricultural land is qualitative rather than quantitative. In other words, just few resorts built inside the agricultural coastal plains would be enough to reduce the aesthetic value of the landscape and to decrease its touristic attractiveness. This might be very true for the plain of Damour, where there is one large block of agricultural plain (with nearly no construction) and for the coastal plain of Naqoura which is relatively narrow and where a small cement intervention might have a huge impact on the landscape. Therefore, the risk of the decrease of the quality of the tourism product is very high for these two zones.

This risk seems to be less for the plain of Sarafand, which is already altered by household constructions and whose landscape can be enjoyed only from the hills bordering the plain, while the landscape of the plains of Damour and Naqoura can be enjoyed by driving on the main coastal highway or road. In addition to this, the current trend of household construction in Sarafand is towards the hills and not the plain. The construction of large resorts in the plain of Sarafand is less likely because this plain is not bordering the sea and is separated from it by a strip of construction (household and shopping constructions).

*Natural beaches*

More than 70% of the linear coastline of CAMP area is natural (beaches, rocks, dunes), compared with 52% for the whole country (CAMP project[25], 2002). This shows the potential and the comparative advantage of CAMP area for a kind of natural beach-based tourism. One should mention that there is an increasing demand in Lebanon for sunbathing in natural beaches rather than in artificial resorts and this increase in demand is revealed by the high and increasing number of visitors to such beaches like the rocky beach located south of Batroun and the sandy beaches of Jbeil, Jiyeh, Rmayleh and Sour.

The natural beaches of Sarafand are altered by a significant amount of illegal constructions and by few large resorts. The remaining small part is less likely to be attractive for tourism, where other nearby much more attractive destinations like Sour, Jiyeh and Rmayleh have more advantages. Regarding the beaches of Damour, mainly those bordering banana plantation, and with no current significant touristic use (sunbathing), there is a potential for a certain kind of ecotourism (hiking along the beach between the sea and bananas) or a low density luxurious beach tourism, where narrow beaches bordered by bananas can offer a unique place for privileged tourists who might be willing to pay a significant fee in order to enjoy such isolated beaches. The beaches located between Sour and Ras El Biyada have a similar potential.

*Wildlife*

Focus was rather on migrating birds and their touristic importance. Bird-watching or birding, is one of the fastest growing wildlife recreation activities.

Geographically, Lebanon lies on the great migration routes between three continents, bound by the sea from the West and arid land from the East. Thus, it constitutes a bridge where most migrating birds tend to concentrate, estimated to be one billion birds per year distributed over 250 species. This migration takes place twice a year from the north to the south and vice-versa.

[25] Reference: Bakhos, W., 2002. Urban Management and Sustainable Development / Second phase report. Prepared for CAMP project / Lebanon.

Such a number of birds, with a high degree of diversity over a relatively small area gives Lebanon a high touristic potential for bird-watching.

Unfortunately, hundreds of thousands of migrating birds are killed every year in Lebanon. Most of them, like predatory birds (as falcons, buzzards, eagles), storks and all small singing birds are protected in most European countries. The protection of these birds and the promotion of bird-watching activities can result in significant ecological and economic benefits for Lebanon. The hills located near of the village Naqoura, close to the border with Israel, present a very high potential for bird-watching activities for several reasons:

- It is a relatively virgin wild area. This provides a perfect enjoyable natural setting for bird-watchers.
- It is a vast area. This gives a great opportunity to detect migrating birds.
- Based on several field visits to this area, it was observed that raptors remain flying above it for a relatively good period of time searching for food. It seems that this area has some ecological characteristics favouring the availability of food for raptors (frequency of rodents and serpents, for example).

A relatively dense oak forest is located close to the village Naqoura and presents part of the border with Israel. It is considered as a military zone and therefore it is a highly protected area for wildlife like jackals and hyenas (based on an interview with a goat keeper). The protection of this wildlife and their resulting abundance promote a night wildlife-watching in the nearby non-military zone. This activity can be also promoted in the Damour Valley.

**Recreational Value of Natural Beaches**

The total economic value of the mostly visited natural sandy beaches located between Damour and Naqoura, namely the sandy beaches of Jiyeh, Rmayleh and Sour are reduced to their recreational value. Indirect, option and existence values are not taken into consideration, as well as other direct values than recreation, like values for research and education.

To assess the recreational value of these beaches, a general survey was carried out for the year 2001 / 2002[26].

*The natural beach of Jiyeh*

The sandy beach of Jiyeh is divided into two zones, A and B.

*Zone A*

The sandy beach of zone A is around 1.5 km long and 50 m wide. It is managed by 7 restaurants / kiosks. The season extends from May 1 to the end of September. Average entrance fee is 7,000 LP / person / day, and it covers the provision of an umbrella, a chair and a shower facility.

The visitors' pattern is as follows:

- in July and August: 2,000 persons / weekend day; 200 persons / week day;
- in May, June and September: 1,000 persons / weekend day, 100 persons / week day.

80% of visitors are coming from Beirut and its surroundings, the rest are from the region of Jiyeh and from the region of Saida. 60% are families, the rest is young single people. Parking of cars is free of charge except of one restaurant.

[26] Information based on the data bank of a report prepared for the World Bank (Owaygen, 2002)

*Zone B*

The Zone B is managed by 1 restaurant and 4 resorts. The resorts have swimming pools but no chalets (except one resort). The entrance fee is 6,000-8,000 LP / person / day. It covers the provision of an umbrella, a chair and a shower facility.

The visitors' pattern is as follows:

- in July and August: 1,000 persons / weekend day, 100 persons / week day;
- in May, June and September: 500 persons / weekend day; 50 persons / week day.

Most of the visitors are families coming from Beirut and its surroundings.

*The natural beach of Rmayleh*

The sandy beach of Rmayleh is 1.5 km long and 30 to 150 m wide. The season extends from May 15 to the end of September. It is managed by 3 restaurants and one resort.

*The Golden Beach Restaurant*

The sandy beach managed by this restaurant is 300 m long and 25 m wide. The entrance fee is 5,000 LP / person / day, which covers the provision of an umbrella, a chair and a shower facility. The parking fee is 1,000 LP / car.

The visitors' pattern is as follows:

- between June 15 and the end of August: 1,100 persons / weekend day; 300-400 persons / week day;
- between May 15 and June 15 & September: 550 persons / weekend / day; 150-200 persons / week day

20% of visitors are coming from Beirut and its surroundings, 70% are from the region of Rmayleh and the rest are from the region of Saida. Most of the visitors are families.

*The Oceana Restaurant*

The sandy beach managed by this restaurant is 450 m long and 40-50 m wide. The entrance fee is 15,000 LP / person / day, which covers the provision of an umbrella, a chair and a shower facility. Parking of cars is free of charge.

The visitors' pattern is as follows:

- between June 15 and the end of August: 2,000 persons / weekend day; 300-400 persons / week day;
- between May 15 and June 15 & September: 1,000 persons / weekend / day; 150-200 persons / week day.

95% of visitors are coming from Beirut and its surroundings. Most of the visitors are young couples. Visitors belong to above average income group. 2 persons / car are estimated.

*The Kazzi Restaurant*

The sandy beach managed by this restaurant is 400 m long and 60 m wide. The entrance fee is 5,000 LP / person / day, which covers the provision of an umbrella, a chair and a shower facility. The parking fee is 1,000 LP / car.

The visitors' pattern is as follows:

- between June 15 and the end of August: 700-800 persons / weekend / day; 200-300 persons / week / day;
- between May 15 and June 15 & September: 350-400 persons / weekend / day; 100-150 persons / week day.

20% of visitors are coming from Beirut and its surroundings, 70% are from the region of Rmayleh and the rest are from the region of Saida. Most of the visitors are families.

*The Sindibad resort*

The sandy beach managed by this restaurant is 250 m long and 60 m wide. The entrance fee is 10,000 LP / person / day, which covers the provision of an umbrella, a chair and a shower facility. The parking fee is 1,000 LP / car.

The visitors' pattern is as follows:

- between June 15 and the end of August: 1,500 persons / weekend day; 300-400 persons / week day;
- between May 15 and June 15 and in September: 750 persons / weekend / day; 150-200 persons / week / day.

10% of visitors are coming from Beirut and its surroundings, 30% are from the region of Rmayleh and 60% are from the region of Saida. Most of the visitors are families.

*Sour Beach Reserve*

The sandy beach south of the city of Sour is a part of a nature reserve established in November 1998. The sandy beach is divided into two zones: zone A which is managed by the municipality of the city of Sour and zone B which has a free access without any management.

*Zone A*

The beach is 900 m long and 120 m wide. The season extends from June 1 to the end of September. The municipality rents spaces for kiosks on the beach (80 kiosks for summer 2001). The entrance fee exists in the form of renting a table and an umbrella from the kiosk (3,000 LP / table).

The visitors' pattern is as follows:

- in July and August: 5,000-7,000 persons / weekend day; 1,000- 1,400 persons / week day.

70% of the visitors are coming from the city of Sour and its region, 20% are coming from Saida and the rest from different regions of the country. Most of the visitors are families.Average expenditure / person / day (including food and services) is 10,000 LP. Parking of cars is free of charge.

*Zone B*

The beach is 500 m long and 150 m wide. There is no entrance fee and no facilities.

The visitors' pattern is as follows:

- in July and August: 4,000 persons / weekend day.

Most of the visitors are families, nearly all of them are coming from the city of Sour and its surroundings.

The sandy beach of the city of Sour seems not to be a destination for Beirut residents seeking bathing on sandy beaches. The relatively far distance from Beirut might be one of the responsible reasons.

To assess the recreational value of these surveyed beaches, the travel cost method was applied. The underlying assumption of the travel cost method (TCM) is that the incurred costs of visiting a site (for example petrol cost and time cost) in some way reflect the recreational value of the site. The survey revealed that around 191,000 day-visits from Beirut and its surroundings (including Jounieh) to the natural beaches of Rmayleh and Jiyeh took place between May and October 2002. The travel and time cost of the 191,000 day-visits to these two natural beaches reflect the recreational value of these beaches. This value was calculated to be around $4,450,000 in the survey year. This should be considered as a minimum estimate because the calculation includes only the visitors to these beaches coming from Beirut and its surroundings. If the same visitors' patterns to the sandy beaches of Jiyeh and Rmayleh will continue in the future while keeping the petrol and time costs constant, then the yearly benefits resulting from the current use of these beaches (conservation for bathing activities) will be a minimum of $4,450,000 and these benefits have to be compared with the benefits of any alternative use of the beaches; construction of a resort for example, before making a decision about this alternative use. One should keep in mind that the recreational value is just one component of the total economic value of the beaches.

To get the total benefits from the current use of the beaches, one should add to the recreational benefits, the benefits of their ecological function as well as their option and existence values. The natural beaches of Damour and Naqoura might have a low current recreational value (due to limited tourism activities), however, it is expected to have a high potential recreational value as well as a high ecological and existence values. One should also mention that the type of beach tourism on the sandy beaches of Jiyeh, Rmayleh and Sour should be considered as a high density mass tourism rather that a low density alternative tourism.

## Tourism Planning in CAMP Area

*Analysis of demand*

This demand is usually expressed in terms of visitor arrivals and of visitor characteristics. Analysis of demand will usually involve 3 stages: historic demand pattern relative to CAMP area, current demand patterns and future demand potential.

*Historic demand pattern*

Tourism in CAMP area was negatively affected by the Israeli occupation for some parts of South-Lebanon (located mainly south of Sour, including Naqoura). Significant tourism activities before May 24, 2000 did not exist.

*Current demand patterns*

Significant tourism activities are taking place on the sandy beaches of Jiyeh, Rmayleh and Sour. As mentioned before, around 191,000 day-visits from Beirut and its surroundings (including Jounieh) to these natural beaches took place between May and October 2002.

*Future potential*

Potential tourists to CAMP area are expected to be dominated by urban visitors coming mainly from the capital Beirut and its surroundings, who are mainly interested in nature-based tourism and who are characterised by above average income and education levels. Visitors to the Shouf Cedar Reserve as well as to other protected areas, like the Cedar Protected Area of Bcharri in

Northern Lebanon can be considered as potential visitors to CAMP area. The average expenditure of interviewed tourists in the Cedar Protected Area was calculated to be US$26 / person / trip (1 to 3 days). In the Shouf Cedar Reserve, more than 40% of the interviewed tourists have a monthly income level of more than US$ 2,000. This indicates a relatively good purchasing power of nature-based tourists. This is a precondition for potential alternative tourism in CAMP area to improve the well-being of local communities. Around 80% of the interviewed tourists in the Shouf Cedar Reserve are interested in potential bird-watching activities in the reserve. This could be considered as promising for the development of this activity in Naqoura. Tourists in the Cedar Protected Area were asked about their motivations to visit potential protected areas in the mountain region of Akkar located in the extreme north of Lebanon. Enjoyment of nature was mentioned by the majority of them, followed by the discovery of a new area. Both reasons can be valid for CAMP area in general and for Naqoura in particular, located in the extreme south of the country. Some of the visitors to the sandy beaches of Jiyeh, Rmayleh and Sour present also a potential. In addition to domestic tourism, Naqoura is expected to attract international tourism, due to the speciality of this area.

*Analysis of supply*

The general tourism supply in CAMP area is presented in the folowing figure.

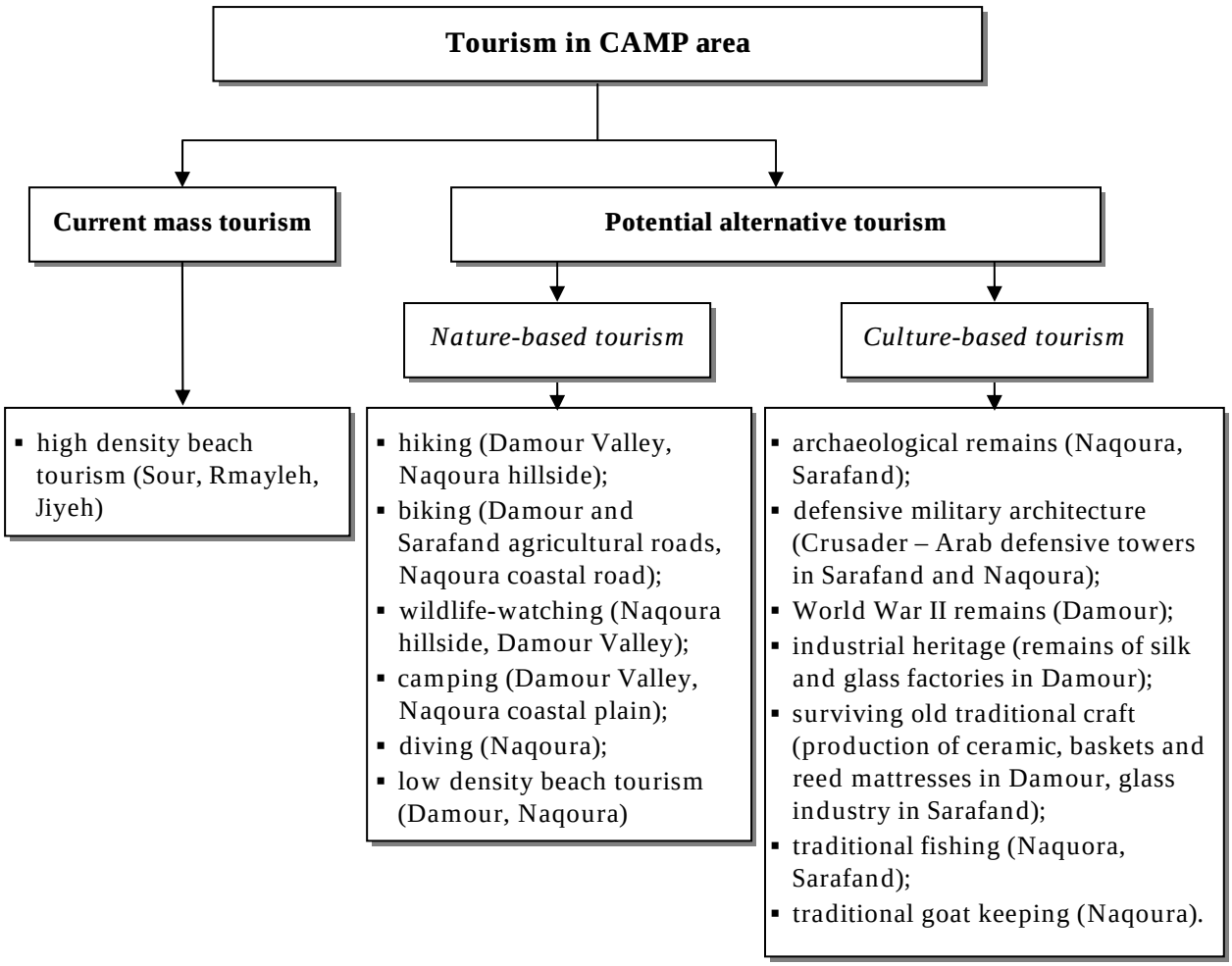



**Figure 19: General tourism supply in CAMP area**

*Community involvement*

The following example relates to community involvement in tourism: almost 100 families depend on the fishery sector in Naqoura[27]; fishermen can be involved in tourism through the supply of fresh fish to tourists and through the fees paid for a cruise or for renting a boat for diving. Regarding tourism-related job opportunities, priorities should be given to those who have an opportunity cost resulting from the preservation of their resources for tourism development (for example keeping agriculture versus using the land for construction). Further issue concerning community involvement in tourism decision-making is determining who should present the community's views and represent their interests. In the case of CAMP area, municipalities are able to assume this role. This was proven by the active involvement and support of the municipalities of Damour, Sarafand and Naqoura in CAMP project.

*Carrying capacity*

In the context of this study, the selected level of geographical limits for carrying capacity assessment is the small size-local level (municipality). At this geographical level, only technical carrying capacity of the areas in question can be assessed, such as the maximum capacity of the beaches; generally the size of these areas is smaller than 200 square km, typically with less than 20,000 inhabitants, and often representing one settlement, beach area etc.[28] This would apply to the natural beach of Damour, to its valley and to the coastal plain of Naqoura. Focus will be on the perceptual carrying capacity in relation to the quality of the visitor experience. One should mention that the precise carrying capacity of an area is not always easy to establish since people have different tolerance thresholds.

What is an overcrowded resort to one person may be an enjoyable place to another. However, a rough estimation of the perceptual carrying capacity of selected sites will be assessed (in the coming section) for an alternative tourism development scenario.

*Visitor and traffic management*

Whether or not the number of tourists to an area constitutes a problem to threaten its carrying capacity, all visitors to an attraction need to be managed in some way. The use of cars and other vehicles for excursions can result in problems of erosion, air pollution, loss of land to car parks and congestion in the suggested destinations. The problem is particularly acute in natural attractions where private cars and coaches often spoil the atmosphere that attracted the tourists in the first place. Among the techniques used to manage tourist traffic are the following:

- Signposting to attract drivers away from sensitive or over-used areas.
- Public transport initiatives to encourage car owners to leave their vehicles in car parks away from the tourist's areas they are visiting, as a way of reducing congestion and providing a safer and cleaner environment. Municipalities are expected to play a major role regarding this issue.
- Road closures, whether permanent or seasonal, road closures can help alleviate acute congestion problems, for example in towns and villages that have narrow streets like the old centre of Sour.

The techniques and tools that a tourist area uses to inform and educate its visitors can have a significant influence on its popularity and the movement patterns and behaviour of its visitors.

[27] Reference: Questionnaires to CAMP municipalities, CAMP project, 2001

[28] Reference: Guide to Good Practice in Tourism Carrying Capacity Assessment. A document prepared by the Priority Actions Program Regional Activity Center (PAP/RAC) of the Mediterranean Action Plan (MAP-UNEP), 2003

Before tourists arrive in an area, the messages and images conveyed in brochures and other publicity materials can influence destination choice. Municipalities, local clubs and organisations should be involved in this activity.

**Nature-Based Alternative Tourism in CAMP Zones**

*Damour*

*Potential for a nature-based alternative tourism*

The natural beach of Damour (Map 5) has an area of around 170,000 square meters (with a length of around 4 km, a width between a minimum of 20 m and a maximum of 90 m). This beach located between the green banana plantation and the blue sea offers a unique place, at national level, for luxurious sunbathing activities. Although sunbathing is usually associated with mass tourism, the natural beach of Damour is thought to attract a relatively few number of privileged tourists, who are willing to pay a relatively high amount of fees to enjoy such a uniqueness. The beach offers also possibilities for hiking.


**Map 5:**
**Natural beach and biking roads in Damour**

The coastal plain of Damour, located between the highway and the sea, encompasses an area of around 1,950,000 square meters. Banana dominates around 70% of the area. The agricultural roads inside this plain present a total length of around 20 km and offer a great opportunity for biking activities (Map 5 and Map 6).

The valley of Damour is relatively wild and offers good opportunities for hiking and night wildlife-watching. The river banks located between the old bridge and the meeting point of the Safa and Hamam Rivers present a nice place for camping. The tents may be located, as Map 7 shows, either between the banana plantations and the river or between the river and the dense oak forest. The few old abandoned houses in the valley could be restored to accommodate tourists. Agricultural products in the valley can be converted to bio-products to supply mainly the campers and hikers.


**Map 6:**
**Biking roads and cropping patterns in Damour**

Visitors to the Shouf Cedar Reserve, who have to drive the road along the valley to reach the reserve are also potential customers. The valley presents a good potential for bee keeping (currently, there is one farmer with 40 bee hives, mainly for household use[29]). Bee keeping would be encouraged if organic farming will be adopted in the valley.

*Carrying capacity assessment*

The perceptual carrying capacity of an area is not easy to establish since people have different tolerance thresholds. Therefore, the following assessment should be considered as a rough and subjective estimation.

- Carrying capacity of the natural beach of Damour: The area of the natural beach of Damour (Map 5) is estimated to be 170,000 square meters. Because an alternative tourism is thought to take place on this beach, a low density of tourists is targeted. The following assumptions are made:
  - 20% of the above mentioned area can be used for superstructure (kiosks) and as sunbathing areas; 5% of the remaining area is used for kiosks supplying food and drink;
  - An area of 100 square meters (10*10) is allocated per two sunbathers;
  - Based on these assumptions, the carrying capacity of the natural beach of Damour would be around 2,600 persons per day.
- Carrying capacity of the camping area in the Damour Valley: The camping area in the Damour Valley (Map 7) is estimated to be around 150,000 square meters. If 50% of this area can be used for superstructure (tents) and if 500 square meters are allocated per one tent (4 persons), the carrying capacity would be 150 tents and 600 persons per day. One should mention that these figures of carrying capacity should not be taken as an absolute value. The main objective of such calculations is to give an idea on quantitative estimation of a low density alternative tourism in the sites in question.

[29] Reference: Questionnaires to CAMP municipalities, CAMP project, 2001


**Map 7:**
**Camping area in the Damour valley**

*Touristic infrastructure and superstructure*

The existing support services for tourism in Damour[30] is as follows:

- 1 clinic;
- 5 gas stations, 3 of which offer car wash services and all offer oil change services;
- 2 restaurants and 2 cafes are found along the Damour River.

Regarding touristic accommodation units, one should keep in mind that the conceived kind of tourism requires simple superstructure, integrated in the natural setting and preferably owned by locals. In this context, the transformation of abandoned historical buildings and traditional houses into accommodation units and restaurants would best match the needs of tourists and would ensure the flow of tourism benefits directly to the local community. For instance, the number of historic buildings and traditional houses amounts to around 15 in Damour[31]. An important issue to be taken into consideration is the management of parking places. These places have to be located relatively far from the attraction in order to minimise the negative environmental impact on the resource in question, mainly fragile habitats like beaches.

*Threat and constraints*

The major threat for potential alternative tourism in Damour is the irreversible loss of the agricultural coastal plain in favour of construction. The main current physical constraints facing tourism development relate to the lack of touristic accommodation units and of organised parking places. In addition, the bad urban planning and unfinished buildings reflect negatively on tourism potential.

*Strategic objective and policies*

In order to enhance and sustain alternative tourism as a strategic choice for the sustainable use of natural resources and as an economic activity which can complement other economic activities taking place in Damour, the following points have to be taken into consideration:

[30] Reference: Questionnaires to CAMP municipalities, CAMP project, 2001

[31] Reference: CAMP Cultural Heritage Component. A report prepared by Dr. Sami El-Masri for CAMP project / Lebanon, 2003

- Concerning land use:
  - The agricultural plain has to keep its agricultural character and for this purpose, it has to be protected by legislation against construction. This could be through a low coefficient of land use for construction (less than 5% for example). The suggested kind of tourism can not be a strong economic argument in the economic thinking of land owners to keep agriculture in the long run. Therefore, only the legislation can ensure the preservation of the plain. This would mean the preservation of around 1,950,000 square meters of the agricultural land located between the highway and the sea (Map 5).
  - The strict preservation through legislation of the natural beach bordering the agricultural plain (Map 5). This would mean the preservation of around 170,000 square meters against any construction activities.
  - The declaration of the Damour Valley as a "specially protected area", mainly its part located between the old bridge and the meeting point of the two rivers: Safa and Hamam (Map 7).
- Concerning supportive policies for the preservation of the agricultural character:
  - Regarding the agricultural coastal plain to be preserved, fees paid by tourists for using this plain for biking would present a small compensation for the benefits forgone. A direct significant support from the ministry of agriculture is needed, mainly for banana producers. This support could be through the protection of the local products from foreign competition. Additional support can come through extension services in order to reduce the cost of production and to improve the quality and the productivity.
  - Regarding the agricultural land in the Damour Valley, organic farming can be promoted. There is an increasing demand for bio-products in Lebanon and world-wide. The geographical isolation of the Damour Valley combined with its potential for alternative tourism present good conditions for organic farming from supply and demand points of view. The high revenues of bio-products are expected to compensate the benefits forgone from alternative land uses. The ministry of agriculture should provide also extension services to promote bee keeping. Bee keeping could become an important source of income for the local community, especially if organic farming will take place in the Damour Valley.
- Concerning implementing agents:

  The involvement of the private sector in the implementation of the touristic superstructure is crucial for tourism development. The government is responsible of legislation related issues regarding land use and of improvement of the infrastructure. The media would play an essential role in the promotion of alternative tourism. The municipality of Damour, supported by local NGOs, should be responsible of tourism management at site level. One should stress (based on a discussion with the head of municipality) the very strong will of the municipality council of Damour to preserve the agricultural character of the plain. This is an essential factor for any future development of alternative tourism in Damour. One should here mention that there is a lot of "external" pressure to classify the plain of Damour as a non-agricultural area.

  The municipality council is also concerned about the slow return of the displaced population (during the civil war) to Damour. It seems that this return, even if it will speed up in the future, it will not put more pressure on the use of the agricultural land for construction, since most of the destroyed houses have been already partly reconstructed. Therefore, no significant extra land will be lost in the future for construction (in relation to the displaced population). The municipality council is looking forward to the final output of CAMP project, with the hope to use it as a document which can support its decision to preserve the agricultural plain from construction.

*Sarafand*

*Potential for a nature-based alternative tourism*

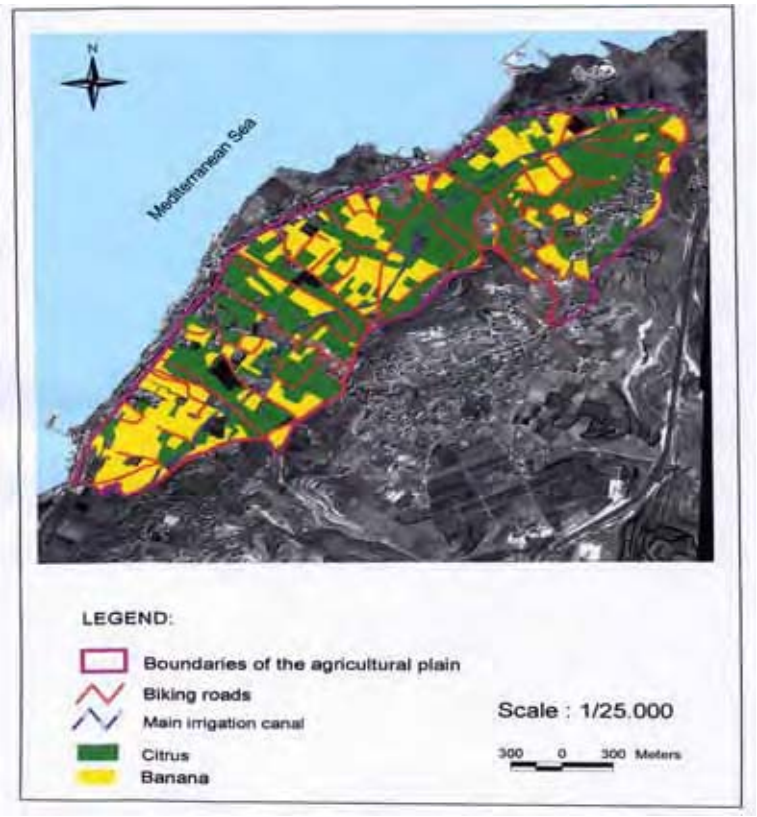
The coastal plain of Sarafand, located between the coastal road and the village, encompasses an area of around 4,000,000 square meters. Citrus orchards occupy around 40% of the area, while banana occupies around 30%. The agricultural roads of this plain, with a total length of around 25 km, offer a good opportunity for biking activities, especially during the flowering season of citrus (Map 8). With its nice smelling citrus flowers, the plain of Sarafand has an advantage over the plain of Damour in attracting bikers.

The natural beach of Sarafand is, in its current status, heavily altered by household constructions and resorts (Map 8). Unfortunately, the beach is not attractive anymore for tourism. The radical changes that have occurred on this beach are irreversible. The remaining natural part of this beach can serve as a destination for swimming and sunbathing activities for the local community of Sarafand. The geographical location of Sarafand near the touristic city Sour reflects positively on the future development of tourism because, at least, a part of the tourists to Sour can be considered potential tourists to Sarafand.

*Touristic infrastructure and superstructure*

The existing support services for tourism in Sarafand[32] are as follows:

- 6 gas stations, 2 of which offer car wash services and all offer oil change services;
- 2 hospitals and 3 clinics;
- 3 hotels, 15 restaurants and 5 cafes.




**Map 8:**
**Biking roads in Sarafand**

[32] Reference: Questionnaires to CAMP municipalities, CAMP project, 2001

Regarding touristic accommodation units, the conceived kind of tourism requires, as mentioned before, simple superstructure integrated in the natural setting and preferably owned by locals. This does not apply to the large-scale sea resorts in Sarafand which have destroyed irreversibly a part of its natural beach and of its agricultural coastal plain.

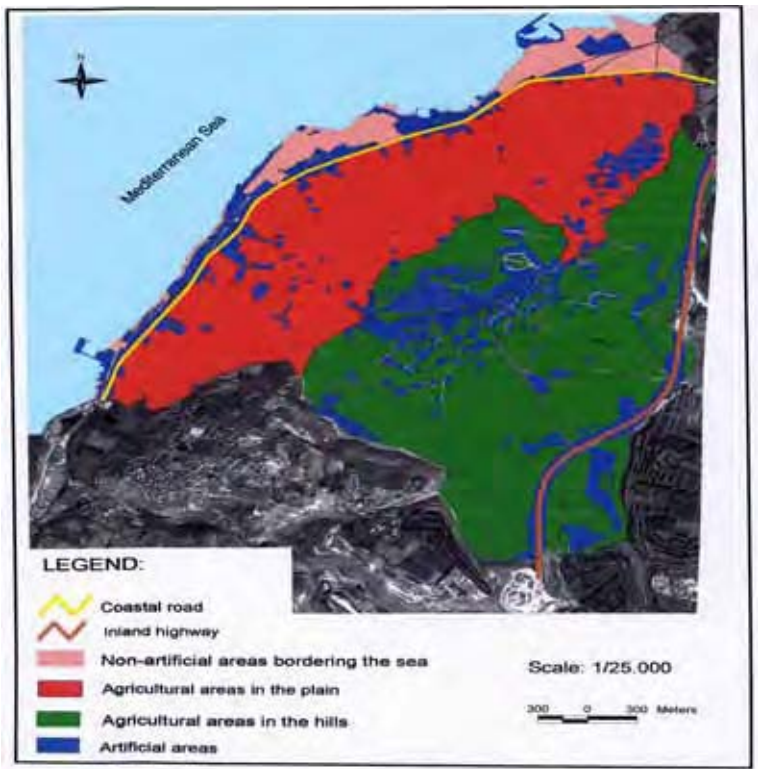
*Threat and constraints*

The major threat for potential alternative tourism in Sarafand is the irreversible loss of the remaining part of the agricultural coastal plain in favour of construction. The main current physical constraints facing tourism development is the lack of touristic accommodation units and of organised parking places. In addition, the bad urban planning, unfinished buildings and illegal housings reflect negatively on tourism potential. The inland highway splitting the area of Sarafand in two affects negatively the development of any potential inland nature-based tourism. However, it is expected to result in less pressure on the agricultural coastal plain regarding future construction activities. Such constructions (mainly for business activities) will most likely take place nearby the highway.

*Strategic objective and policies*

In order to enhance and sustain alternative tourism as a strategic choice for the sustainable use of natural resources and as an economic activity which can complement other economic activities taking place in Sarafand, the following points have to be taken into consideration:

- Concerning land use:
  - The agricultural plain, located between the coastal road and the village, has to keep its agricultural character and for this purpose, it has to be protected by legislation against construction. This could be through a low coefficient of land use for construction (less than 5% for example). This would mean the preservation of around 3,800,000 square meters. In this plain (shown as red colour in Map 9), already 361,000 square meters were lost for construction (shown as blue colour in Map 9).
  - The remaining 562,000 square meters of natural beaches and agricultural areas bordering the sea (shown as pink colour in Map 9) have to be strictly protected against any construction activities. They present the last non-artificial areas of the whole seashore of Sarafand.
  - The non-artificial areas (shown as green colour in Map 9) of around 2,900,000 square meters (mainly agricultural land), located in the hill side between the plain (shown as red colour in Map 9) and the inland highway, have to be regulated by legislation for construction (appropriate coefficient of land use for construction, appropriate number of floors, etc.) in order to minimise the visual pollution.
- Concerning supportive policies for the preservation of the agricultural character: As in the case of Damour, the suggested preservation of the agricultural coastal plain in Sarafand would imply definitely a social benefit but also a private cost to land owners, which is the opportunity cost (or the benefits forgone) of using the agricultural land for other purposes such as construction. This urges the government intervention in order to provide supportive measures for those who will be bearing the cost of the preservation of the agricultural character of this plain. Fees paid by tourists for using this plain for biking would present a small compensation for the benefits forgone. A direct significant support from the ministry of agriculture is needed, mainly for citrus and banana producers. This support could be through the protection of the local products from foreign competition. Additional support can come through extension services in order to reduce the cost of production and to improve the quality and the productivity.




**Map 9:**
**Land use in Sarafand**

- Concerning implementing agents: The involvement of the private sector in the implementation of the touristic superstructure is crucial for tourism development. The government is responsible of legislation related issues regarding land use and of improvement of the infrastructure. The media would play an essential role in the promotion of alternative tourism. The municipality of Sarafand, supported by local NGOs, should be responsible of tourism management at site level. One should here stress the awareness of the municipality council regarding the threat of the irreversible loss of the coastal plain in favour of construction. The municipality council is looking forward to the final output of CAMP project with the hope of making use of it for the development of the town. One should mention that CAMP project has contributed in the emergence of a new environmental NGO in Sarafand.

*Naqoura*

*Potential for a nature-based alternative tourism*

The narrow coastal plain extending between Ras El Bayada and Naqoura village presents a potential for camping activities (Map 10). The presence of a striking rocky shore with clear blue waters offers a very special place for bathing and diving. The coastal road running inside the coastal plain with a length of around 6 km is suitable for bikers who are seeking to enjoy unique scenery. The administrative boundary of the municipality of Naqoura encompasses a woodland area (mainly oak trees) of around 17,000,000 square meters. Out of these, around 2,500,000 square meters are very dense. This wild woodland area, presenting in its large part the border with Israel, is an important habitat for wildlife, mainly jackals and hyenas. This is expected to increase the chances of seeing these animals at night. Because of the sensitive location of these woodlands, these species have been protected for a long time and most likely became abundant.

A large area of around 13,000,000 square meters (Map 11) presents a potential for migratory bird-watching, for hiking and for night wildlife-watching, coming mainly from the dense nearby oak woodlands. Wooden towers, equipped with infra-red binoculars, serve for night wildlife-watching.


**Map 10:**
**Camping area in Naqoura**

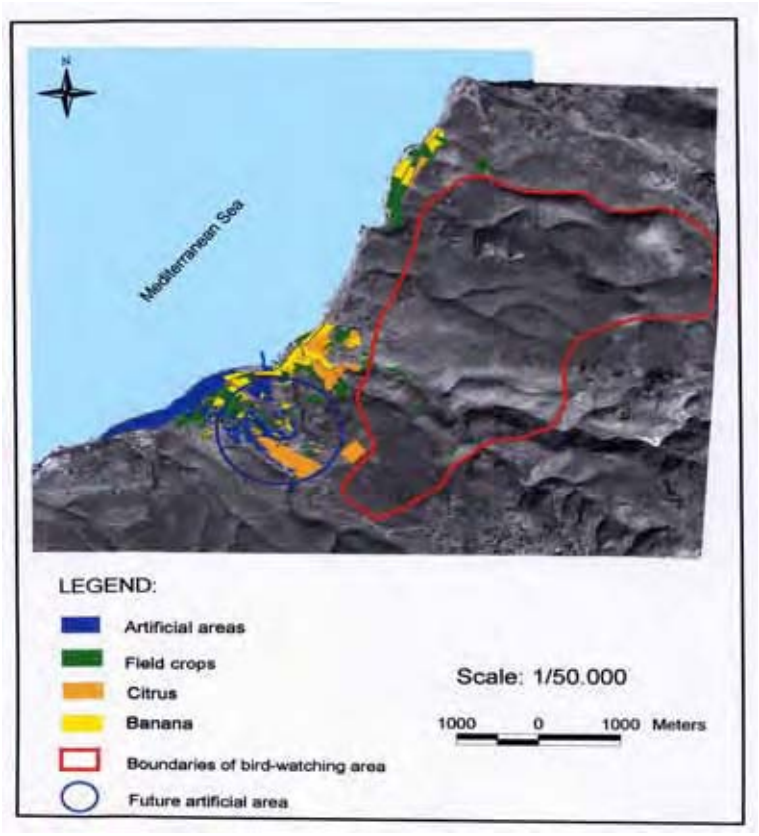
The cultivated land located inside the administrative boundary of the municipality of Naqoura (Map 11) amounts to an area of around 1,500,000 square meters. The cropping pattern is a follows:

- Citrus: 465,000 square meters;
- Banana: 380,000 square meters;
- Other crops (mainly field crops): 678,000 square meters.

The relative isolation of this agricultural land, located relatively far away from other cultivated land in neighbouring villages, in addition to the absence of polluting industries, both give Naqoura a unique opportunity for organic farming. Bio-products are expected to serve visiting tourists as well as national markets. Large-scale bee keeping has to be promoted (currently, there are 15-20 bee hives in Naqoura for household use[33]).

Naqoura has also a speciality, its proximity to the Israeli borders. Keeping in mind the long history of Israeli occupation of South-Lebanon and its recent repatriation, the seeing of the border with Israel and of a road sign like “Towards Palestine” is itself a touristic attraction.

[33] Reference: Questionnaires to CAMP municipalities, CAMP project, 2001




**Map 11:**
**Land use in Naqoura**

*Carrying capacity assessment*

The perceptual carrying capacity (Youell, 1998) of the camping area in Naqoura will be assessed in this subsection. As mentioned before, the perceptual carrying capacity of an area is not easy to establish since people have different tolerance thresholds. Therefore, the following assessment should be considered as a rough and subjective estimation. The camping area in the coastal plain of Naqoura (Map 6) is estimated to be 430,000 square meters. If 50% of this area can be used for superstructure (tents) and if 500 square meters are allocated per one tent (4 persons), the carrying capacity would be 430 tents and around 1,700 persons per day. One should mention that these figures of carrying capacity should not be taken as an absolute value.

*Touristic infrastructure and superstructure*

The existing support services for tourism in Naqoura[34] are as follows:

- 2 gas stations without car wash;
- 2 legal restaurants and 10 others that are illegally constructed;
- 1 clinic and UNIFIL base hospital.

Regarding touristic accommodation units, one should keep in mind, as mentioned before, that the conceived kind of tourism requires simple superstructure, integrated in the natural setting and preferably owned by locals. An important issue to be taken into consideration is the management of parking places. These places have to be located relatively far from the attraction in order to minimise the negative environmental impact on the resource in question, mainly fragile habitats like beaches.

[34] Reference: Questionnaires to CAMP municipalities, CAMP project, 2001

*Threat and constraints*

The major threat for potential alternative tourism in Naqoura is the irreversible loss of the seashore in favour of construction (mainly resort construction). The rural exodus taking place in Naqoura is putting less pressure on the use of the agricultural land for housing activities. On the other hand, a good part of the land in Naqoura belongs to few large owners from outside the village. This would higher the risk of using such lands for construction in the future and hence reflect negatively on alternative tourism potential.

The main current physical constraints facing tourism development is the bad quality of the coastal road between Sour and Naqoura, in addition to the lack of touristic accommodation units and of organised parking places. Other constraints relate to the presence of mines which can have a long term psychological negative effect on tourism, even after they will be completely removed. The suggested wildlife-watching area is considered for the time being as bordering a military zone. This would hinder any potential touristic activity in this area.

According to the head of municipality, political and social reasons will hinder tourism development in Naqoura, especially camping activities. However, one can suggest some first steps for tourism development in the short-run, which can be carried out by the municipality:

- Signposting for Naqoura cultural attractions;
- Soft management (food and sunbathing services) of a part of the Naqoura seashore.

Such steps would attract some visitors to Naqoura (most likely, from the tourists coming to the neighbouring Sour).

*Strategic objective and policies*

In order to enhance and sustain alternative tourism as a strategic choice for the sustainable use of natural resources and as an economic activity which can complement or even dominate other economic activities taking place in Naqoura, the following points have to be taken into consideration:

- Concerning land use:
  - Preservation through legislation of the agricultural character of around 1,500,000 square meters of currently cultivated land. This could be through a low coefficient of land use for construction (less than 5% for example).
  - Declaration of Naqoura beach and Naqoura woodlands (around 17,000,000 square meters of woodland) as “specially protected areas”.
  - The expansion of housing activities of the local community as well as of small-size accommodation units for tourists has to be concentrated in one zone surrounding the village (Map 11). Any new construction in the suggested zone has to be perfectly integrated in the natural surrounding, according to specific legislations. The current, relatively large, area used by UNIFIL could serve in the future as a construction area for small-size touristic accommodation units and as a car parking for the visitors.
- Concerning supportive policies for the preservation of the agricultural character: As the case in the Damour Valley, the agricultural land of Naqoura presents a good potential for organic farming mainly because of its geographical isolation. A direct significant support from the ministry of agriculture is needed. This support could be through the promotion of organic farming as well as through the protection of the local products from foreign competition. Additional support can come through extension services in order to reduce the cost of production and to improve the quality and the productivity.
- Concerning implementing agents: The involvement of the private sector in the implementation of the touristic superstructure is crucial for tourism development. The

government is responsible of legislation related issues regarding land use and of improvement of the infrastructure. The media would play an essential role in the promotion of alternative tourism. The municipality of Naqoura, supported by local NGOs (which do not exist for the time being), should be responsible of tourism management at site level. Based on a discussion with the head of municipality, it was revealed that he has sympathy for construction activities on the seashore and on the hills overlooking the sea. On the other hand, he showed an understanding for the concept of alternative tourism and the associated preservation policies.

**Conclusion**

Tourism supply in CAMP area can be differentiated into two broad categories:

- a current mass tourism (the high density beach tourism in Jiyeh, Rmayleh and Sour); and
- a potential alternative tourism (a low density nature-based and culture-based tourism).

Alternative tourism is thought as a strategic choice for the sustainable use of natural resources in Damour, Sarafand and Naqoura. It is expected to play a dominant economic role in Naqoura, given the natural potential of this region, its cultural heritage, its rural character, its traditional fishing and goat keeping, and the resulting broad range of alternative tourism activities which can be offered, extending from common activities like hiking and low density beach tourism, to less common ones like camping, to more specialised ones like diving and wildlife-watching. Alternative tourism would support the local economy in Damour without being a dominant activity in terms of revenues. This support will be mainly through the touristic use of the natural beach (low density beach tourism), of the agricultural plain (biking) and of the valley (camping, hiking, wildlife-watching) as well as through the visits of the remains of the silk and glass factories and of the surviving old traditional crafts (production of ceramic, baskets and reed mattresses). Ranked least in terms of its tourism product among the three municipalities in question, Sarafand would benefit from alternative tourism mainly through its archaeological remains, its traditional surviving glass industry, its traditional fishing and through the touristic use of its agricultural plain (biking). The coastal degradation of Sarafand through resorts and illegal housing activities placed this town in a disadvantaged position, compared with Damour and Naqoura.

In order to enhance and sustain alternative tourism as a strategic choice for the sustainable use of natural resources in Damour, Sarafand and Naqoura, supportive national policies related mainly to the legislation concerning land use and to the activation of the agricultural sector are required.

## Systemic and Prospective Sustainability Analysis

The Systemic and Prospective Sustainability Analysis (SPSA) is the term designating an established method to understand sustainability by means of indicators. It involves 12 stages, which, step by step, helps teams to understand what sustainability is, to provide them with a means to set out their own understanding of sustainability and to create indicators that can be monitored in order to find out if sustainability is improving or worsening.

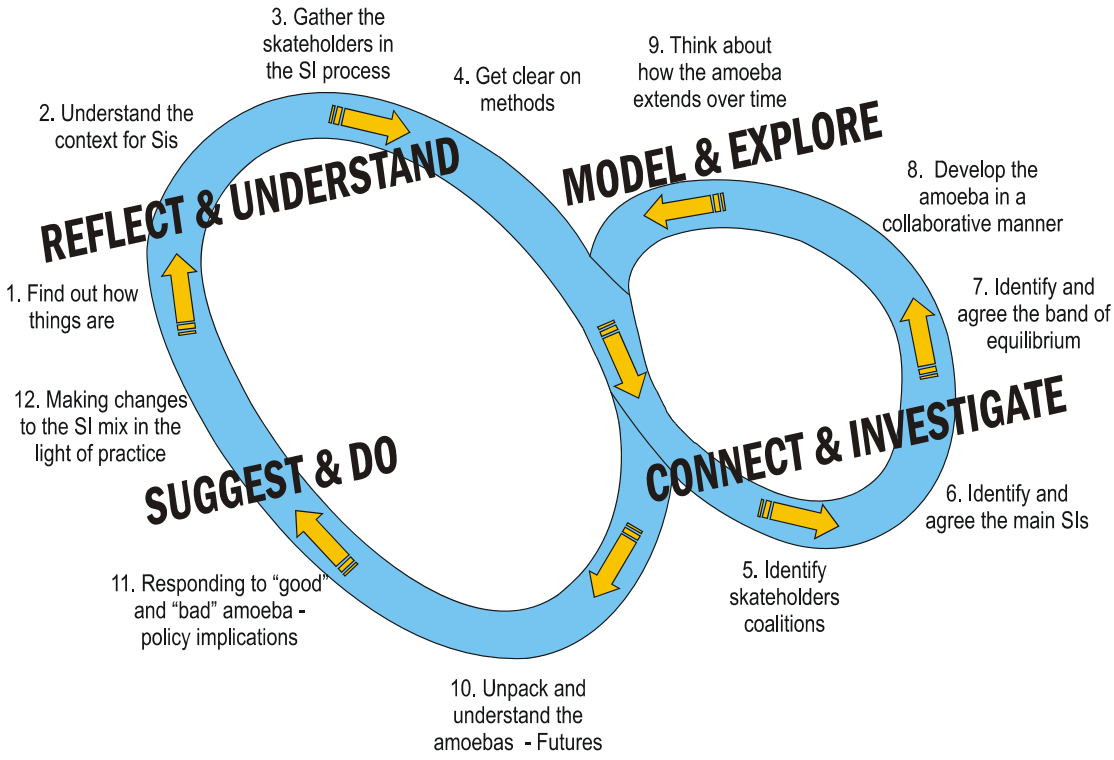



**Figure 20: Stages of SPSA**

SPSA was achieved in a total of four workshops in the year. Participants represented national and local governments, private sector, local communities as well as experts from the CAMP team and national experts. The tasks that were implemented over one year of time included the following:

- identification and agreement on the system, the stakeholders and the main sustainability indicators;
- participatory development of the systemic and prospective sustainability analysis with description and assessment of the system by main indicators;
- development of scenarios for future trends making use of key-indicators;
- provision of inputs to final Project documents and post Project activities;

- proposal for dissemination of results for scientific and lay communities;
- proposal for sustaining SPSA activity beyond the life of this specific project.

**First workshop**

During the first SPSA workshop, the SPSA concept was gradually explained and understood. Through rich pictures, working teams were able to create a visual image of the challenges and opportunities in the environmental situation they see in Lebanon and inform other groups about their drawings.

After identifying five priority tasks and 5 priority issues out of rich pictures, participants identified 30 indicators by reflecting on the rich pictures, tasks and issues, and then reconciling all indicators in one schema by theme of indicators. The cluster of indicators included: agriculture, urban, local management, heritage management, socio-economic, tourism, alternative energy, air, green spaces, water, waste water, solid waste, and activities.

Participants then clarified what they mean by an SPSA team and what they expect to achieve and how. The outcome was a root definition as well as an activity plan.

**Between first and second workshops**

As an entry point to the second SPSA workshop, the SPSA local team met twice between the first and second SPSA workshops and achieved the following:

- They developed 81 agreed-upon indicators with thematic teams and municipalities, in addition to new indicators resulting from the Participatory Rapid Appraisal (PRA) process.
- Out of the 81 agreed upon indicators, 30 indicators showed how they will be measured and by whom.
- They ensured a balance between qualitative and quantitative indicators, looking at those already developed in LEDO[35] and Blue Plan.
- They encouraged thematic teams and municipalities to think of gaps – compared to previously developed indicators.

Throughout the exercise the focus was on locally relevant indicators because the team felt that those would be more committing and easier to follow up on.

**Second workshop**

Based on the root definition developed during the first workshop, two adjusted versions were developed during the second workshop, with the aim of renewing the participants' understanding of what they achieved and it is remain to be done. Split into two groups, the participants went through the root definition to make it more focused as follows:

- *Group 1:* A collaborative effort between the public and the private sector at all levels, to develop sustainability indicators for the Lebanese coastal area that reflect the status-quo and its challenges, aiming at observing changes overtime, management of resources and planning.
- *Group 2:* A participatory project created and developed by a team of municipalities – responsible for its sustainability – thematic experts, administrations and related ministries, in co-ordination with Mada (NGO), and the supervision of Blue Plan, to

[35] Lebanese Environment and Development Observatory

identify issues and to find indicators for appropriate decision-making in the CAMP area, and for developing a participatory working methodology.

Then, the participants (organised into working teams) reviewed the 81 agreed upon indicators, made changes when needed and chose 30 indicators:

- to represent the entire spread of the project, ensuring that indicators cover economic, social and environmental aspects, in addition to indicators of state, pressure and response; and
- to be more realistic in terms of indicators that will be tracked.

Out of the process of choosing 30 indicators, the outcome was 22 primary indicators, and 16 secondary indicators. The tertiary list included the 46 remaining indicators. The indicators were put in such categories depending on priority to participants who agreed to each list by consensus.

Following prioritisation of indicators, the teams worked on the band, which relates to "how we aspire to be – in a realistic way". It reflects an agreed expectation as to where the level of achievement is considered to be sustainable for any indicator. Therefore, for each indicator, the band of equilibrium shows a "below expectation" – that which is considered unsustainable, and akin to levels from ten years ago. On the other hand, the band shows a "beyond expectation" – which is also considered to be unsustainable.

Regarding the consistency of measurement, the centre of the band is 0 and numbers progress outwards. Each indicator is independently coherent. For example, one band can say less than 5% and more than 20%, or can say less than 4ml and more than 90ml.

The next step was to develop the initial bands of equilibrium, by doing the following:

- set bands for all Sis;
- identify and collect necessary data;
- develop histories of the Sis;
- begin to develop the bands in full.

This was demonstrated in the form of a table, using a few indicators as examples:

- SI name;
- upper limit, lower limit;
- how will the data be collected (existing statistics, new survey, known source of information);
- who will do this (municipality, SPSA team);
- when will it be presented (every 6 months? Is data available historically?);
- how feasible is this indicator (on a scale of 1-10 depending on certainty of doing step 3, 4 and 5).

In order to get an overall visual image on the sustainability of the project, all indicators were put together in the form of an AMOEBA. To reach the AMOEBA, participants had to look at the lower and upper band they put for a set of indicators, and then decide where we are today (using estimate real figures) with regards to this band, according to the following criteria, and then mark each indicator on the radial diagram:

- 1 = very unsustainable by deficit;
- 2 = unsustainable by deficit;
- 3 = sustainable –lower limit;

- 4 = sustainable;
- 5 = sustainable – upper limit;
- 6 = unsustainable by excess;
- 7 = very unsustainable by excess.

The following chart demonstrates the current situation of a set of indicator the team developed as it relates to a common band of equilibrium (that is between 3 and 6 on the pie chart). The AMOEBA gave a visual assessment of present conditions and can be used to compare with developing situations in 3 or 6 months.

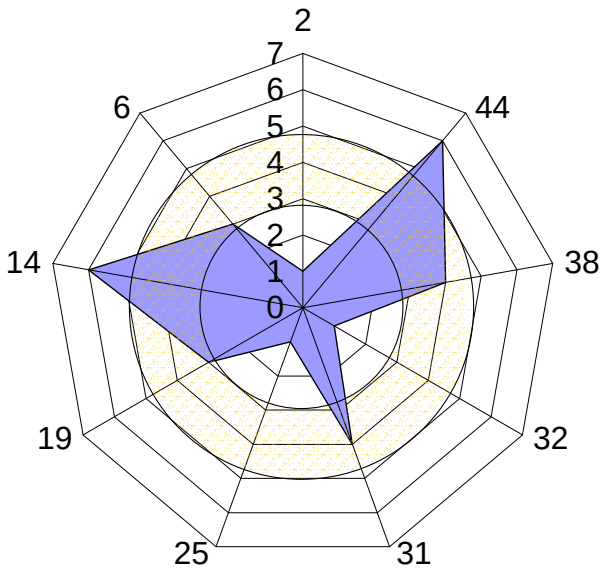



**Figure 21:**
**Radial diagram of the initial indicators**

*Third workshop*

The primary list of indicators (a total of 22) was presented to the wider stakeholders in the third workshop who were then asked to reflect on the indicators, and to provide feedback on:

- Wording of indicators;
- Means of measurement;
- Historical data and where to find additional data; and
- Missing information.

Working groups drew AMOEBAS for a set of indicators with historical data. The objective was to get a visual image of the sustainability of those indicators.

**Table 44: Indicators charted**

| Number of indicator | Damour | Sarafand | Naqoura | Average |
|---|---|---|---|---|
| 3 | 5.5 | 5.5 | 5.0 | 5 |
| 4 | 7.0 | 7.0 | 3.2 | 6 |
| 6 | 5.0 | 1.2 | 1.0 | 2 |
| 8 | 1.0 | 6.2 | 2.0 | 3 |
| 12 | 1.0 | 2.0 | 1.5 | 2 |
| 19 | 1.0 | 1.5 | 1.0 | 1 |

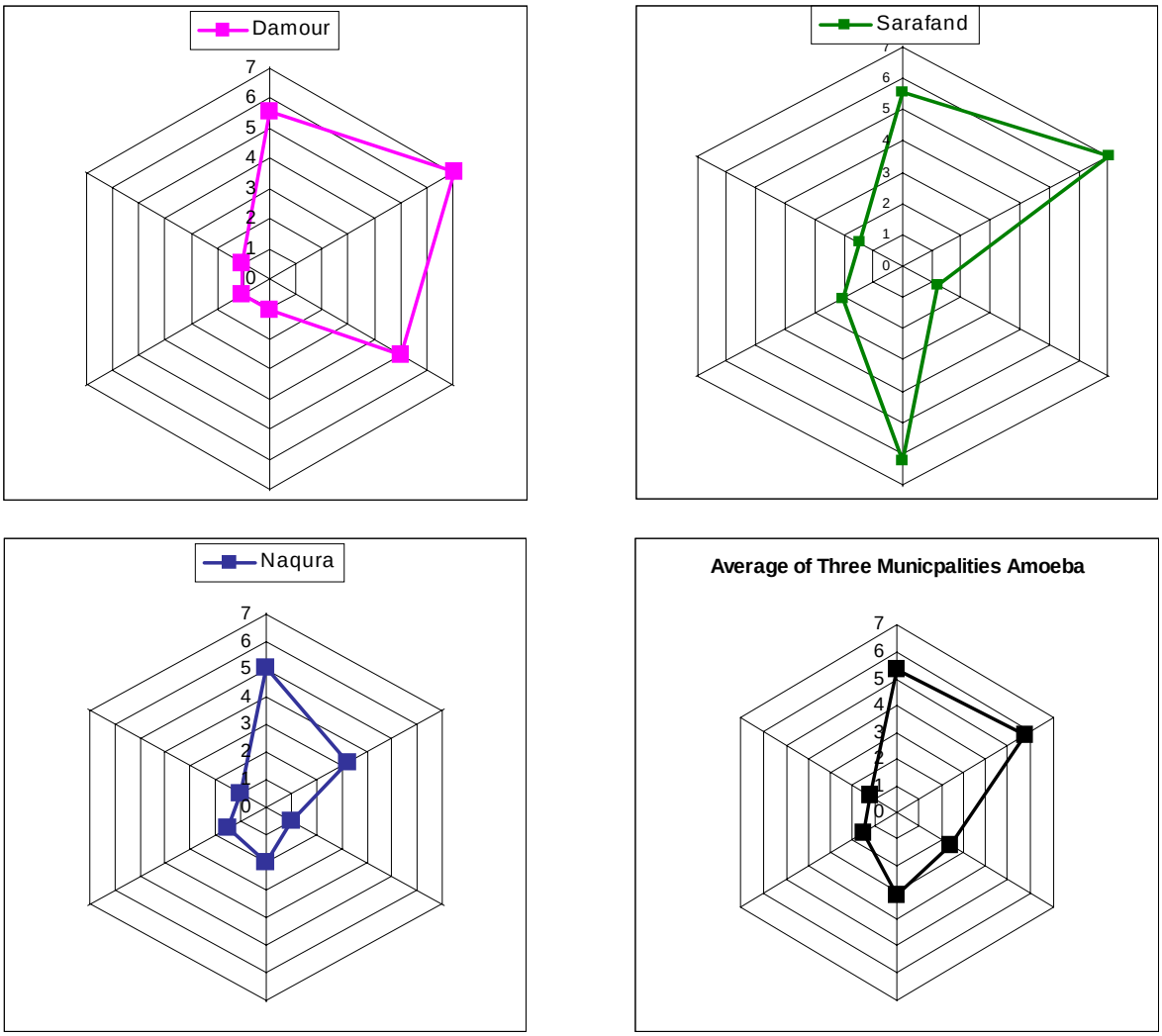



**Figure 22: Amoebas of each of the three Municipalities and the average of the three municipalities**

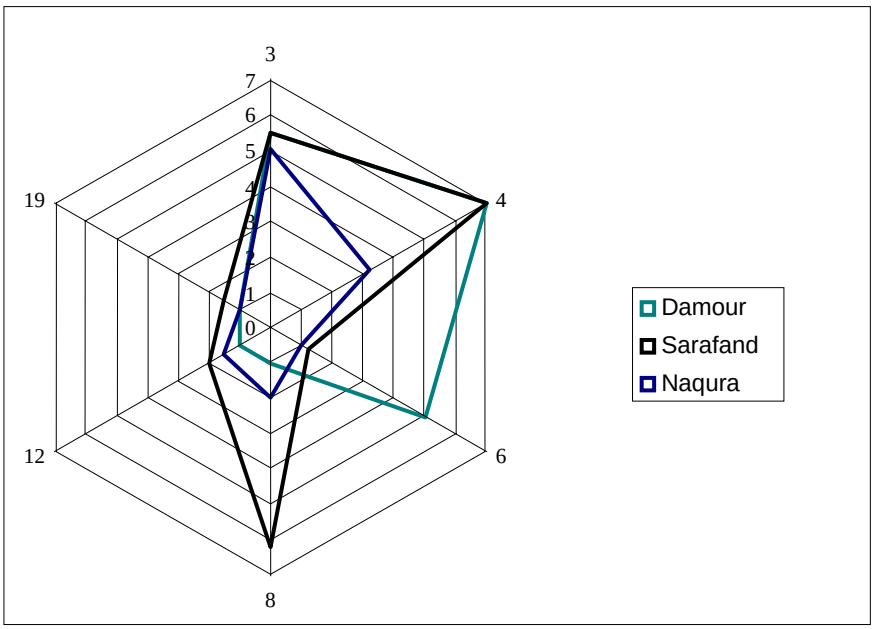



**Figure 23: Overlapping Amoebas of each of the three Municipalities**

In order to assess change over time, participants formed working groups to project trends for two indicators *(scenario planning exercise).* The first exercise involved drawing the scenarios, i.e. what were the three possible trends for a particular indicator. The second exercise explored possible future situations and choosing desirable future situations by the method of scenarios, i.e. by putting three possible trends in a graph based on the three previous drawings for each indicator.

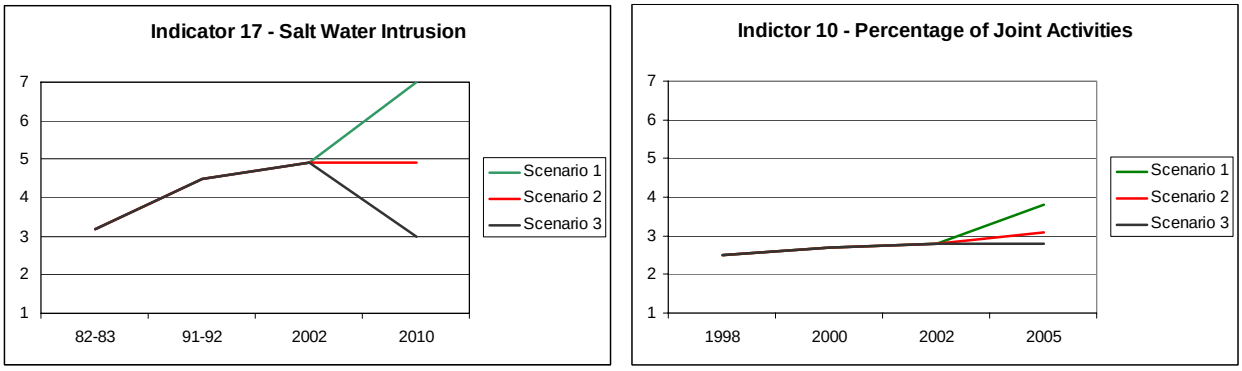



**Figure 24: Scenario planning exercise**

**Table 45: Scenario planning exercise**

| Indicator | Scenario 1 | Scenario 2 (most likely) | Scenario 3 |
|---|---|---|---|
| 10 (Percentage of Joint Activities) – Based on historical date for Damour | ▪ Many water pumps<br>▪ Water is wasted<br>▪ Too many inhabitants<br>▪ Increase in salt water intrusion | ▪ Pumping continues but there is less waste (better management)<br>▪ Balance between consumption and pumping even when population rate increases (due to better management of pumps)<br>▪ More maintenance teams | ▪ Beirut pumps not only from Damour<br>▪ Quality of ground water improves<br>▪ Awareness of Water Authority is increased to manage water resources<br>▪ More maintenance teams |

| Indicator | Scenario 1 (most likely) | Scenario 2 | Scenario 3 |
|---|---|---|---|
| 17 (Salt Water Intrusion) – Based on historical data for Sarafand | ▪ Participation is very high between municipality and local community (all NGOs and all sectors)<br>▪ Co-ordination with local and international organization increases<br>▪ More expertise is mobilised<br>▪ Financial resources increase<br>▪ Growing decentralisation<br>▪ More trust in municipality | ▪ Stagnation – status quo<br>▪ CAMP (Coastal Area Management Programme) still assists but some projects are blocked<br>▪ Many stakeholders involved but not inclusive of all sectors | ▪ Pessimism<br>▪ Municipality does not make use of resources<br>▪ Central government does not contribute to local authority resources<br>▪ Centralisation |

Following the two exercises, the working groups were asked to create a link between the present and future by describing the CATAOC, as presented in the following table.

**Table 46: The link between the present and the future**

| | |
|---|---|
| **Customers:** | Beneficiaries |
| **Actors:** | Active agents (government, civil society etc.) |
| **Transformation:** | What main things need to happen to take us there |
| **Assumption:** | What variables make that work / happen |
| **Owner:** | Decision-makers |
| **Constraints:** | In the future |

**Table 47: Sample for indicator number 10** *(Percentage of Joint Activities)*

| | |
|---|---|
| **Customers:** | Local community |
| **Actors:** | Municipality – active locals – political and religious authorities – expert and financial resources – local, international and government actors |
| **Transformation:** | Mobilising participation through communication and municipal committees – putting in place a future action plan to ensure that municipal council adopts a methodological approach in development – co-ordinating with activists / decision-makers – advocating for administrative decentralisation |
| **Assumption:** | Willingness and persistence – awareness of public interest – initiative and responsiveness – incentives – holistic vision |
| **Owner:** | Municipality and NGOs |
| **Constraints:** | Conflicting interests (political and social) – municipal council not implicated |

**Table 48: Sample for indicator number 17** *(Salt Water Intrusion)*

| | |
|---|---|
| **Customers:** | Inhabitants and farmers of Damour – inhabitants of greater Beirut |
| **Actors:** | Government – CDR – Water Authority – Municipality of Beirut – Municipalities in Greater Beirut – Municipality of Damour – Concerned NGOs |
| **Transformation:** | Regional water management plan – Rehabilitation of the domestic water infrastructure – Monitoring of water distribution – Change in water consumption behaviour – Change in taxation policy |
| **Assumption:** | Political and strategic decision about water management – Lobbying on all levels for policy change – Awareness campaign – Privatisation |
| **Owner:** | Government – CDR – Water authorities – Private sector |
| **Constraints:** | No political will – Uncontrolled water management and distribution |

The next step was to draw up an action plan that might help the team achieve the most likely scenario. The two main questions were: What needs to happen for the transformation to be achieved? Then what would the team do about it? It is at this stage that indicators prompt action.

*Action Plan for indicator number 10 (Percentage of Joint Activities)*

- Raising awareness on criteria of electing municipal members based on action programme.
- Mobilising municipal committees through active participation of all members in the community.
- Developing a future action plan in participation with local community and based on priorities.
- Benefiting from expertise and success stories.
- Lobbying government for decentralisation.
- Ensuring financial resources in addition to municipal budget as a form of cost-sharing.
- Lobbying government to develop municipal laws.
- Creating municipal union to facilitate the implementation of decisions.
- Capacity building of municipality to manage and co-ordinate development projects.
- Highlighting public interest when choosing projects.
- Encouraging citizens to monitor work of municipality through monthly reports on major decisions.

- Creating awareness activities and sharing experiences.
- Creating opportunities and incentives for those who take initiative.
- Implementing laws including environmental laws.
- Producing a monthly newsletter to highlight activities in municipality.
- Creating a website.
- Proposal writing to mobilise funds.
- Encouraging women and youth to run for municipal council.
- Adopting creative projects.
- Developing an urban management plan.

*Action Plan for indicator number 17 (Salt Water Intrusion)*

- Review / issue reform / enforce new water taxation laws.
- Establishment of a higher council for water management.
- Strengthening of water management authorities; capacity building training for personnel; and strengthening legislation.
- Find alternative surface and groundwater sources.
- Empower the maintenance body (human and material).
- Awareness campaigns for the consumers (schools, TV spots, events) to change behaviour.
- Carrot and stick policy to enforce compliance.
- Enforcing the academic sector in studying and monitoring (observing) water resources.
- Participatory approach in decision-making.
- Information sharing.
- Role of the municipality with NGOs in lobbying to address water problems.

It is to highlight some key points of a presentation made during the workshop to reflect on important milestones and the process by which the indicators were developed:

- The significance of the SPSA is the participatory process by which municipalities themselves identified indicators, and therefore the relevance of those to the local context. There was throughout the process input from different thematic teams contributing to the group effort, which helped in shaping the way issues that the municipalities found important to be measured.
- Indicators have not been presented as a given, they are rather an expression of diverse problems that reflect local needs and priorities, and help municipalities make appropriate decisions for positive changes in their municipalities. Note that there exists a discrepancy in priorities from one municipality to the other.
- Indicators of Blue Plan and LEDO were consulted throughout the process; however, SPSA indicators focus on local context, even when they do not conform to other set indicators.
- The process started with a smaller team made up of CAMP thematic teams and municipalities who participated in the previous workshops as well as in working sessions between workshops. The process is now at a stage of expanding to include feedback from wider stakeholder and to co-ordinate efforts for data collection and updating.
- The purpose of asking wider stakeholder for feedback is mainly to overcome challenges faced in the process, and to learn from knowledge and experience of participants. Some indicators are incomplete; reflect gaps or lack of consensus on terminology and content.
- Indicators reflect situation in CAMP area that is around 70% agricultural.
- Indicators are linked to strategy, whether policy, response level or pressure. Depending on what strategies the local authorities are adopting, all should be a measure of former practice.

*Between third and fourth workshops*

Before the fourth workshop, a meeting was held to present the primary list of indicators to more than 20 stakeholders (experts, universities, research centres, ministries etc.). Participants were asked for feedback on historical data. This data was supposed to be used in the fourth workshop to draw out more AMOEBAs and scenario planning. Some of the findings following this field research were:

- There is a lack of historical data for the primary list of indicators that are specific to the CAMP area.
- The fact that most of the indicators lack historical data lead most of the interviewees to suggest surveys, studies and researches to be conducted in order to have more information on the topics being questioned and reviewed.

*Fourth workshop*

During the workshop, and in order to conduct scenario planning for the project as a whole, participants selected five key indicators, which represent the range and depth of the project experience as well as issues of critical importance to those engaged in this work. The Indicators were as follows (bearing in mind diverse categories of indicators):

- % of cultivated agricultural land from total arable land;
- % of artificial coastline from total coastline;
- Area of green spaces (public gardens, reforestation) per inhabitant;
- % of joint activities between municipality and local groups and NGOs from total number of projects implemented by the municipality per year;
- Quality of potable water.

Since it was the last SPSA workshop, and in order to ensure the sustainability of the SPSA process and to set out scenarios for the future of the coastal area, it was important for participants to develop scenarios for the future on key indicators and to develop a marketing strategy to submit to the media as an advocacy tool for policy change.

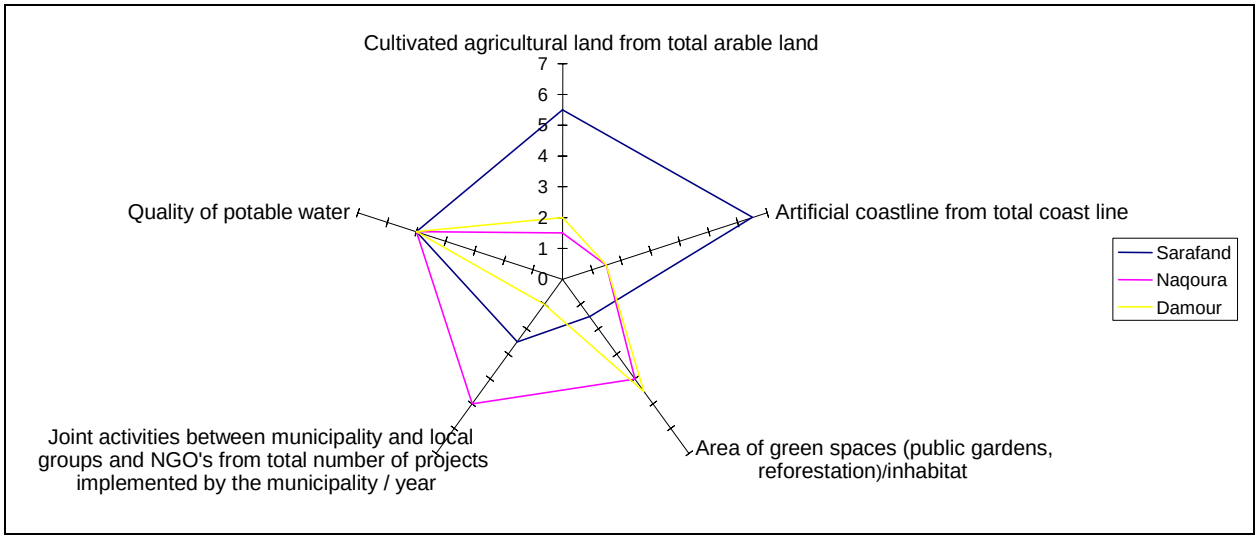



**Figure 25: Five indicators amoeba**

Participants started by drawing rich pictures for overall CAMP as it is now. The results were grouped as presented in the following table.

**Table 49: CAMP area as it is now (rich pictures)**

| GROUP 1 | GROUP 2 |
|---|---|
| ▪ Green spaces in some areas | ▪ Important discovery of cultural sites |
| ▪ Potential ideas but no political will | ▪ Some green spaces |
| ▪ Public participation but limited | ▪ Politicians live on the moon |
| ▪ Uncontrolled urban growth | ▪ Rapid urban growth south of Beirut |
| ▪ Unimplemented laws | ▪ Dynamite use for fishing |
| ▪ River pollution | ▪ Coastal degradation |
| ▪ Municipality disregards laws and just hopes for more projects | |
| ▪ Land slides | |
| ▪ Public complaints are not taken seriously | |
| ▪ Roads get worse because elections are later | |
| ▪ Environmental pollution | |
| ▪ Mountains of waste | |

The participants then drew rich pictures of how the CAMP area would look like in three years, and to provide a description of those images.

**Table 50: CAMP area in three years (rich pictures)**

| GROUP 1 | GROUP 2 |
|---|---|
| ▪ Treatment of waste water and sewage | ▪ Some people work together to develop the reserve of Tyr and expand to other areas |
| ▪ More attention given to cultural sites | ▪ Pressure to bring lousy politicians down from the moon |
| ▪ Participation and interaction with lots of UN agencies | ▪ Some well-kept houses but crazy buildings around |
| ▪ Pressure groups are formed to implement laws | ▪ Treatment of waste water and sewage |
| ▪ Festivals increase as a source of tourism | ▪ Handicapped ministry of environment |
| ▪ More green spaces in urban areas | ▪ The sea is in a garbage state |
| ▪ More awareness and information provided from academia and other experts | ▪ Some people keep areas dirty on purpose – they do not like green spaces |
| ▪ Sustainability through participation to increase resource base | |
| ▪ Roads get done prior to elections | |
| ▪ No solution to illegal constructions | |
| ▪ More haphazard building | |

Following the drawing of rich pictures for the future of the coastal area of Lebanon, participants developed two scenarios. From those scenarios, participants derived tasks and problems for the future that need to be addressed based on the issues they identified in the pictures in order to ensure better sustainability of their environment.

**Table 51: Tasks and Challenges for Picture one**

| Tasks | Challenges |
|---|---|
| ▪ Continuation of awareness activities<br>▪ Putting pressure on related government agencies to implement laws and strengthening decentralisation<br>▪ Municipal elections to be based on action plans<br>▪ Accountability and transparency<br>▪ Fundraising based on plans and proposals<br>▪ Capacity building and developing initiatives and experiences<br>▪ Producing an urban plan for land use<br>▪ Halting illegal use of public beach<br>▪ Developing eco and cultural tourism<br>▪ Using sustainability indicators in local development plans | ▪ Lack of information<br>▪ Lack of implemented laws<br>▪ Not making use of indicators for planning and decision-making<br>▪ Ignorance of voters regarding public interest<br>▪ Lack of funding sources and where they exist, putting them in ineffective sectors<br>▪ Lack of awareness about the concept of development that takes into account the economy, the environment and human development.<br>▪ Individual interests overcoming public interests in decision-making<br>▪ Not involving academia in developing local plans and studies<br>▪ Absence of ministry of planning to put forth plans on a national level<br>▪ Brain drain as a result of the harsh economic situation |

**Table 52: Tasks and Challenges for Picture two**

| Tasks | Challenges |
|---|---|
| ▪ Awareness raising (popular and government)<br>▪ Implementing laws<br>▪ Participation in decisions and responsibilities<br>▪ Completing infrastructure with environmental considerations<br>▪ Increasing natural green areas<br>▪ Linking economic and environmental activities to the reserve in Tyre<br>▪ Providing green spaces in neighbourhoods<br>▪ Paying attention to fauna resources<br>▪ Developing eco or alternative tourism<br>▪ Setting up local environmental and cultural clubs with youth committees | ▪ Lack of perseverance due as time goes by<br>▪ Narrow political interests<br>▪ Disregard to public good<br>▪ Financial challenges<br>▪ Haphazard buildings<br>▪ Lack of planning<br>▪ Lack of co-operation<br>▪ Pollution<br>▪ Lack of environmental thinking (big investments – small local benefit)<br>▪ Individualistic initiatives |

As a next step, and in two teams, participants devised a marketing activity plan for the 5 key indicators. The first group looked at each indicator separately, while the second group focused more on the general process of marketing using some indicators as examples. A number of customers and actors are identified for each indicator while the aspired change is reflected in the transformation column. The process was based on the following questions:

- What are the **information products** we want to publicise?
- What is the **customer** base we want to reach?
- What is the marketing **strategy**? (Rich pictures linked to activity plans)

**Table 53: Marketing activity plan – Group 1**

| Information products | Customers | Actors | Transformations |
|---|---|---|---|
| 1. Quality of potable water | ▪ Local inhabitants<br>▪ Municipalities<br>▪ Water Authority<br>▪ Investors | ▪ Municipalities<br>▪ Local NGOs<br>▪ Universities | ▪ Improving and monitoring the quality of water |
| 2. % of cultivated agricultural land from total arable land | ▪ Farmers<br>▪ Investors<br>▪ Municipalities | ▪ Ministry of Agriculture<br>▪ Municipalities<br>▪ IDAL<br>▪ The Green Project<br>▪ Kafalat | ▪ Providing employment opportunities<br>▪ Increased production<br>▪ Better use of land |
| 3. % of artificial coastline from total coastline | ▪ Urban Planning<br>▪ Municipalities<br>▪ Investors<br>▪ Inhabitants | ▪ Ministry of Transport<br>▪ Ministry of Tourism<br>▪ Remote Sensing Unit | ▪ Providing strategic areas without ports, construction nor tourism facilities. |
| 4. Area of green spaces (public gardens, reforestation) per inhabitant | ▪ Inhabitants<br>▪ Municipalities<br>▪ NGOs<br>▪ Elderly people | ▪ Ministry of Environment<br>▪ Urban Planning<br>▪ Municipalities<br>▪ Architects<br>▪ Landscapers | ▪ Improving urban plans<br>▪ Improving quality of life<br>▪ Providing public recreational spaces<br>▪ Decreasing pollution |
| 5. % of joint activities between municipality and local groups and NGOs from total number of projects implemented by the municipality per year | ▪ Inhabitants<br>▪ Municipalities<br>▪ NGOs | ▪ Inhabitants<br>▪ Municipalities<br>▪ NGOs | ▪ Increasing quality participation |
| 6. Quality of sea water | ▪ Local inhabitants<br>▪ Municipalities<br>▪ Water Authority<br>▪ Investors | ▪ Municipalities<br>▪ Local NGOs<br>▪ Universities | ▪ Improving and monitoring the quality of water<br>▪ Providing cleaner sea for swimming and fishing |
| 7. 7) Archaeological and cultural heritage sites | ▪ Municipalities<br>▪ Directorate of Antiquity<br>▪ Ministry of Tourism | ▪ Ministry of Tourism<br>▪ Ministry of Culture<br>▪ Municipalities | ▪ Developing economic benefit from cultural tourism<br>▪ Paying more attention to archaeological sites |

**Table 54: Marketing activity plan – Group 2**

| | |
|---|---|
| **Information Products** | The concept of an indicator and its dissemination in development work through:<br>▪ Talking about indicators and their importance as tools for gaining information and using them when discussing problems and in decision-making.<br>▪ Providing examples about indicators such as: The problem in agriculture happens when there is misuse of land and this requires knowledge. It also requires mapping cultivated land from total arable land in order to design a plan that improves agriculture production. That is how the indicator "% of cultivated agricultural land from total arable land" came about. Also, with regards to the municipality and its relation to the community and the extent to which they trust it, it was necessary to develop an indicator that measures the extent of co-operation: "% of joint activities between municipality and local groups and NGOs from total number of projects implemented by the municipality / year" |
| **Customers** | Customers of the idea of indicators: Municipal council, active individuals, and decision-makers.<br>Customers of each indicator: This group varies according to the indicator and the problems at hand; however, the main and sustainable customer is the municipality. For instance the municipality is a customer whether the indicator talks about agriculture or relationship with local community. |
| **Actors** | Participants of SPSA and experts in thematic areas and indicators. |
| **Transformations** | Convincing customers about the idea of indicators and its importance in planning and decision-making. |

Both groups highlighted the importance of awareness raising about indicators and their importance for promoting positive change in any thematic area.

Even when customers and actors change according to each indicator, the municipality is common to all – acting both as a catalyst for information sharing and as a key decision-maker.

In terms of marketing channels, the groups mentioned several options: municipal council meetings linking indicators to annual plans, awareness raising forums within the community, and visual and audio media.

As a final exercise in the workshops, participants reflected on the final messages they wanted to put across about the SPSA process:

Group 1:

- Indicators require a continuous effort and support and participation from all those concerned.
- To carry the process forward, there needs to be co-operation between the public and the private sector.
- The three municipalities need to continue their co-operation and share their experience with other municipalities.
- The responsibility of each group or individuals needs to be spelt out for each indicator and mutual trust needs to be affirmed.
- Signing and respecting a protocol between agencies responsible for collecting and providing information.
- Specifying the team that will follow up on SPSA process.

Group 2:

- It is necessary to adopt the indicators' sheet.
- The calculation method for each indicator should be at least funded once.
- At least one employee in each municipality should be trained on the technicalities of indicators.
- SPSA is a tool to monitor a municipal development plan – indicators are meaningless without such a plan.
- SPSA is an incentive for the municipalities to develop a local development plan and strategies.
- Municipalities should adopt indicators.
- Human resources are needed to sustain this process.
- The SPSA experience should be disseminated to other municipalities.
- Municipalities need to co-operate in order to effectively calculate indicators.
- Funding should be provided for calculation methods.
- A network is needed to share information and experience between all CAMP activities.
- It is important to put out a local indicators' guide to introduce related topics to public.
- Dissemination of indicators should focus on simple language.
- An Internet site is needed for SPSA.

*Further Development of SPSA Process*

In terms of how the SPSA process can be developed further, participants made the following observations:

Group 1:

- Continuous revision of bands of equilibrium.
- Implementing action plans and agreed upon objectives.
- Evaluating results attained.
- Reviewing indicators and replacing them with new or other indicators depending on priority and effectiveness.
- Further developing calculation methods.
- Specifying the party responsible for follow up on SPSA.
- Training municipal council on method and simplicity of using indicators.
- Creating software for indicators.
- Presenting the advantages and importance of indicators (positive impact) to be reflected in local development plans.

Group 2:

- Training workshops.
- Awareness raising sessions about the importance of indicators.
- Developing a guide on indicators and marketing strategies.
- Media campaign to explain indicators and encourage other municipalities to adopt process.
- Disseminating the idea of indicators through academic channels.
- Marketing tools that help in calculation methods of indicators.
- Linking local development plans to indicators.
- Expanding network of those concerned through seminars with local development NGOs.

*Main Action Points for the Future*

- Dedicated follow up of SPSA process by municipalities.
- Finding resources to support follow up on indicators (Blue Plan, Ministry of Environment).
- Assigning an annual budget line item for following up on indicators.
- Encouraging annual sessions to review results and produce report on indicator findings.

*Conclusion*

Given that the fourth workshop was undertaken only three months after the third workshop, this made it difficult to collect all necessary data. In addition, CAMP project was close to completion, which put additional pressure on the SPSA team to follow up on SPSA in addition to other CAMP-related activities. Moreover, it was not possible to draw out AMOEBAs or to undertake scenario planning for five key indicators during this workshop. This work had to be planned for post workshop IV.

It is to note that the workshop process was highly interactive with key participants representing thematic team experts, municipal council members and local community members.

## Participatory Programme

The participatory programme was conducted in the three municipalities over one year of time. Before the participatory programme activity itself starts, CAMP Office carried out a primary footstep in getting closer to the municipal councils of Damour, Naqoura and Sarafand by requesting them to fill a municipal questionnaire that demanded information of socio-economic, developmental, environmental, infrastructure and other dimensions deemed indispensable to smooth the progress of the different thematic activities.

Several objectives were established for this very crucial thematic activity that is believed to be the driving motor for translating the different technical activities of CAMP into issues owned and followed up by the local community groups themselves. The major participatory programme objectives were the following:

- strengthening and developing the role of the municipalities of Damour, Sarafand and Naqoura in development planning and environment protection;
- increasing the knowledge and awareness of CAMP communities and others on the importance of conserving coastal natural resources;
- establishing linkages between municipalities and CAMP thematic experts;
- mobilising and involving community-based organisations, academic institutions, non-governmental organisations and individual experts in the implementation of the CAMP project.

The first step in introducing CAMP Project in municipalities was to gain confidence of the municipal councils. This was not an easy task, especially that the municipalities in Lebanon were faced by being contacted by a multitude of national and international organisations asking for data (with the objective of elaborating developmental projects), and then, these entities disappear without any further contacts or feedback. Moreover, the nature of the project was not to facilitate what could be its tangible outputs. Indeed, the majority of the municipalities were in shortage of financial resources; the project producing only studies created some sort of reluctance towards how could these studies be of benefit at the short term.

It is to note that the positive developments with the municipal councils depend very much on their level of co-operation, willingness to delegate and empower other members of the community, and basic knowledge about the community and about management issues. In addition, relationships between members affect positively or negatively what the Council can do as a group. On the other hand, when municipal councils are approached for assistance or partnerships, there is a tendency to view outside parties as mainly funding agents with a one-shot event, and not as a long-term relationship that involves input, facilitation of activities, and new initiatives conducted with mobilised community resources.

Relationships between local community groups and representatives with municipal councils are very much influenced by family, political and/or interest affiliations. This was extremely observable ever since the first meetings and sessions were held in each of the three municipalities. In addition, there was perceived a gap related to some community groups such as youth, NGOs, women, others who never approached or penetrated the municipal house. The

implementation of the CAMP Project was a first step to demolish this imperceptible barrier at intra-municipal level.

To achieve the project goal and objectives, a variety of activities were conceived and implemented; some of these activities were implemented at each municipal level, while others were organised to increase dialogue and collaboration among the municipalities targeted by CAMP and others. The close collaboration between the participatory programme team and CAMP office was a necessity to ensure the accomplishment of the project outputs at local level.

*PRA sessions*

At the beginning of the project, initial visits were made to the municipalities of Damour, Sarafand and Naqoura to inform the mayors about the Participatory Programme in CAMP. To get acquainted with the different local community groups and to introduce the project, the Participatory Rapid Appraisal (PRA) technique was applied in the three municipalities. Sessions were separately organised and held for municipal councils, men, women, youth, etc. The PRA sessions' objectives were:

- to get to know the municipal council in each town and their vision and role as well as what they identify as priority needs;
- to get to know the communities in each town, their relationship to the municipality and their vision, role and opportunities for participation in decision-making processes and planning in the municipality;
- to find out available and potential resources in each municipality including NGOs that operate in it and potential partners in the implementation of CAMP;
- to find out how the local community sees its problems/challenges and their definition of environment and municipality.

The methods used included:

- interviews (individual and group);
- focus group meetings;
- area mapping; and
- time mapping for each group of men, women and youth.

**Photo 75, Photo 76: PRA sessions**

*Exploration trips*

To increase networking among the municipalities, three exploratory trips were conducted to Damour, Sarafand and Naqoura with a group of 40 diverse members of the local communities. The objectives were:

- to increase awareness about three thematic topics, one in each trip: urban planning, water resources, and cultural and natural heritage; and
- to allow for interaction among local communities in all three towns, focusing on the participation of youth, women and men of all background.

The programme for each theme included a 2-hour awareness session and discussion, one or two site visits pertaining to the theme and an evaluation session which included a draft of awareness initiatives for each community. CAMP thematic member teams provided the information and expertise, while the Participatory Programme team facilitated the events. Resources used were audio-visual pictures, handouts with statistics and information as well as projection of case studies.

Main issues covered in urban planning were:

- danger of haphazard urban growth, often unseen;
- old cities revolving around one centre; the dramatic increase in population in the nineteenth century, and subsequently the industrial revolution that led to dramatic urban growth;
- more than 50% of people in the world live in cities. In Lebanon, the rate is 65%;
- out of unorganised urban growth, many environmental problems arise including water pollution, sewage mismanagement, depletion of green spaces etc;
- Barcelona was the first city that implemented urban planning based on roads, green spaces and residential areas, in order to preserve the old city;
- it is important to have construction permits to control and better plan urban growth;
- the problems of urban growth in the three municipalities are related to construction on arable land.

Cultural heritage exploration trip aimed at:

- highlighting the importance of rural cultural heritage and its protection;
- understanding cultural heritage so that it is integrated in social and economic development. In other words, how to adequately exploit cultural and natural heritage for the benefit of the community;
- types of available cultural heritage at municipality level;
- the responsibilities of the government, local authorities and local communities in preserving heritage.

It is to note that some areas within the villages were not easily accessible to the local communities. One illustrating example is the trip made into the compound of UNIFIL to observe an old coastal Crusade tower, under the supervision of the CAMP cultural heritage expert and UNIFIL representative.

Finally, water resource management presentation highlighted the importance of water conservation, whether surface or ground water; the expert presented approximate data about water consumption for domestic use, irrigation and other usages. Then, participants were taken to the banana fields to observe irrigation methods. Then a visit was made to the beach to inspect the extent of cleanliness and potential for eco-tourism. Last but not least, a trip was made to the one of the bridges overlooking the Damour River to observe the water depletion.


**Photo 77, Photo 78: Field trips**

On the other hand, field trips to other Lebanese areas presenting high ecotourism and landscape values were organised. The objectives of visiting Ramlieh village (Mount Lebanon area) and Al-Jord Project (Hermel area) were:

- to present local success stories of ecotourism initiatives to the communities of the three municipalities;
- to exchange views and experiences between the visitors and the ecotourism community people; and
- to demonstrate to visitors that initiation of ecotourism projects is not merely based on financial resources.

The trip was coupled with a presentation made by the ecotourism expert in Al-Jord Project.

*Interaction between municipalities and CAMP thematic experts*

During initial visits to the municipalities and in focus group meetings conducted with community members during the PRA, the roles and linkages among CAMP teams were explained and municipalities were encouraged to directly contact CAMP thematic experts for any further technical required at the municipal level.

*Exposing CAMP beyond the project area*

Since the beginning of the project, CAMP office insisted on effectively and adequately propagating the concept, objectives and anticipated outputs of the project to the media. For that purpose, and to increase the knowledge and awareness of CAMP target groups on the importance of conserving coastal natural resources, media sources (such as newspapers, magazines, TVs and radios) were invited to describe the project. For the same reason, some of the thematic experts were invited to contribute. They were also asked to play a role into national and regional conferences with the aim of exposing success stories and lessons learned. This initiative will continue for some time after the CAMP phasing out. Finally, occasions to expose CAMP beyond the Lebanese territories were also seized.

*Preparation of a brochure on and dissemination of Local Agenda principles*

To facilitate grasping the principles and mechanism of Local Agenda among the municipal councils and local communities, CAMP office conceived a booklet on Local Agenda and Sustainable Development in Arabic. The booklet was financed by the Hanns Seidel Foundation, a German institution working in development issues.

Instead of a joint workshop, participatory programme team integrated the concept and process of Local Agenda 21 into other interactive sessions. For instance, in Damour, Sarafand and Naqoura, this was discussed in local group meetings as the basis of work on participation, community involvement in planning strategies, as well as mainstreaming environmental issues into development plans. Specifically in Sarafand, Local Agenda 21 was brought up in an interactive session on the role of municipalities and community participation. It was also addressed in the strategic planning workshop in which 32 community and municipal council members were participating.

*Participation of national experts and CAMP technical team*

Several interactive sessions were held consecutively in the three municipalities. The gatherings targeted the local community at large. Among the main gatherings were the following:

- A two-hour presentation was provided by a public administration official and urban planning expert on the legal framework of municipalities. The mayor's speech invited to an open discussion on the role of municipality and local community members in addressing public issues. This kind of forum was new to such a community and was taken by some participants as an opportunity to criticise the actions of the municipality to date.
- The Director of the Poverty Alleviation Project (UNDP Project) exposed his experience in local community initiatives and the role of local groups in setting development activities. The sessions were highly attended by youth groups.
- A session on solid waste management was organised in Sarafand. Presented by a solid waste expert, CAMP expert on water resources and Life project manager, the forum had a high impact on the community reaction to organise a committee that followed up on solid waste management in their town. Main outputs were awareness campaigns in schools, TV stations and among households. Women initiated a campaign to sort waste, especially glass sorting (making benefit of the presence of a glass factory in town).

*Support the three municipalities in drafting a set of awareness initiatives in their communities*

Depending on the priorities set by each of the three municipalities, assistance was provided to adequately implement the planned activities. For instance, and as part of the recycling project that the Sarafand local group is working on, the local community group decided to conduct an evaluation session of the first stage of their plan. Assistance to this phase included resource mobilisation to complete other activities of the project such as distributing special baskets for recycling non-organic waste; finding a land appropriate to separate garbage; and negotiating with local industries to buy recycled material.

In schools, awareness raising sessions continued, targeting most schools both public and private. CAMP office assisted the local groups in facilitating contacts with the Ministry of Environment to obtain copies of solid waste awareness materials and kits that helped them to disseminate information.

*Support municipalities in mobilising and networking with potential partners in the community*

Participatory Programme team conducted focus group visits in the communities, meeting and facilitating the constitution of different community groups such as the women's group in Sarafand which is keen on initiating a recycling programme as a pilot in their street; a mixed group of women, youth and men in Naqoura who are working on setting up a social, environmental and cultural club that will be a forum for initiating environmental activities; and a group of youth activists, women and men in Damour who have formed themselves as a co-ordinating body for thematic activities. CAMP team mobilised community members to initiate activities, organised capacity building workshops, as well as established networks and created communication channels with their respective municipalities.

*Municipal development Plans*

To translate the different technical outputs into real work, CAMP team was requested to expose his/her respective study's outputs in the presence of municipal council and local community representatives. After agreement on the results, recommendations per theme were organised into a municipal action plan ready for implementation at short, medium and action plan. The plans were available at the municipal council members.

*Workshop on proposal writing, fundraising and resource mobilisation*

This workshop is a first initiative. In fact, it was not previously reported that such workshop was widely attended by the local community at large. The workshop was highly interactive, borrowing from previous experiences and examples in resource mobilisation. It was also an opportunity to widen the circle of resources in the community by introducing lists of NGOs that the UNDP puts together annually, as well as list of local and international funding agencies, and sample proposal guidelines. One of the highlights was the practicality of this workshop: Participants were asked to practice writing proposals on priority issues they wanted to work on, and time was given for mock fundraising interviews so that participants would be trained on-the-job.

Following an evaluation session, the same participants met after the workshop to edit the final proposal, which will be submitted to funding agencies.

Follow-up meetings were held with the group to share responsibilities in a resource mobilisation strategy. Some were responsible for contacting funding agencies and collecting information on potential co-operation channels, while others focused on finalising the technical details of the proposal initiated in the workshop.

In addition, municipalities helped each other in identifying thematic experts. For instance, one organization *the Makhzoumi Foundation* working initially with Damour has expanded its activities to Sarafand and Naqoura, working on tree planting and handicrafts from recycled material and computer centre set-up and software training.

*CAMP Web Page*

In order to disseminate the outputs, lessons learned and experiences met during CAMP project, the Ministry of Environment established a web page for CAMP Project. The web page will include concept and objectives of the project, the different thematic activities reports, some description on the CAMP technical centres and team, etc. The web page will be available on-line starting March 2004.

Finally, it is important to present the strengths and constraints faced during the implementation of a participatory programme at the level of municipalities. These are summarised as follows:

*Strengths*

- The CAMP teams are all highly co-operative. It is clear how much the team complements each other and what strengths each could bring to the CAMP project.
- Municipalities welcome and participate on different levels in organising, mobilising and implementing activities.
- Municipalities participated in the financial expenses of part or all activities implemented.
- Youth in all three communities showed high enthusiasm and energy to take part in the project.
- It was made clear to municipal councils that as a team, CAMP job was to collaborate with everyone and not to interfere or take sides in political conflicts within communities.

- Municipalities interact with other players keen on building their capacities such as the Union of Municipalities Project organised by the Italians, as well as twinning projects with French municipalities.
- The continuous and growing support of municipalities in CAMP activities has been crucial in implementing activities, despite the fact that sometimes, they face criticism from community members who use interactive forums as a time to vent and complain about the municipality.
- Each community is different in its pace and type of active local groups being formed. This has challenged the participatory programme team to follow what already exists and to build on it without having to ascribe each group to a set of pre-planned criteria in local committee formation. For example, in Sarafand, the initiative came from a group of women, while in Damour, there was more apathy to take part in any activities and so the brunt of the work falls on a few active youth; whereas in Naqoura, a mixed group of people saw that a club is a starting point for any initiative in the community because this type of forum creates a sense of belongingness and motive that would otherwise be difficult to create.
- Observing the pace and initiative of the three municipalities has been a valuable learning experience in terms of subsequent planning and similar future projects. One of the re-assuring facts is that co-operating municipalities require relatively low intervention efforts to get engaged and to take initiative and follow through with plans. This is the case of Sarafand, which has been exemplary in its efforts, both as municipal council members and as local community activists. The local team is highly motivated and learning skills that help them build on what they already know. For example, the resource mobilisation and fundraising workshop was tailored to their needs as they identified them. Subsequently, the proposals they produced were of high quality and of relevance to their plan of action.
- The pool of expertise continues to expand within CAMP, with the inclusion of one additional team member working specifically on fisheries, as well as the contact persons that municipalities engage with. This is a re-assuring factor that activities will continue beyond CAMP because more experts and institutions are networking with all three municipalities.

*Challenges*

- Co-ordination process takes time, especially when there are joint activities with multiple CAMP teams playing a role.
- Delegation in decision-making varied from one municipal mayor to another. This makes it harder to organise and implement activities on time.
- Trying to work with all members of the community when a particular municipal council is politically biased and hinders the participation of one faction in the community.
- Translation of reports is costing more than was expected in time and funds.
- Choosing speakers and trainers to contribute to workshops and sessions with the community has been a challenge, be it because of the limited time of certain trainers or because of difficulty in ensuring harmony between their approach and that of CAMP.
- Issues of participation and participatory planning continue to be challenged by some municipality's more traditional view of principle and approaches in participation, although there is improvement in levels of participation and some municipalities are making real efforts.
- The participatory programme co-ordination team is often pre-occupied with activities other than CAMP during the spring/summer period which makes it hard to share tasks and hence to implement a plan. Therefore, the team needs to re-consider the current team make-up and include other members to take on some tasks.

# Marine Conservation Areas

### Thematic Activity's Objectives

The Marine Conservation Area is an on-going Thematic Activity. Expected to phase out by the end of the year 2004, this activity is currently implemented by Amwaj Al Bia'a, a non-governmental organisation and administered by the Specially Protected Areas / Regional Activity Centre (SPA / RAC) and the Ministry of Environment. The delay in the implementation is due to the several bidding processes that the Ministry of Environment had carried out to select the entity to be charged of the activity. After three procedures, the decision was taken during the last months of CAMP operation for the account of Amwaj Al Bia'a.

The activity has as objectives:

- to implement a pilot activity related to the inventory of fauna and flora, whether marine, terrestrial and freshwater biotopes, for the areas of Naqoura and Damour;
- to identify the exact boundaries of the concerned areas;
- to prepare local diagnostic Analysis to identify and assess the local conditions and issues in the area of the proposed project, including: problems, physical alterations and destruction of habitats, sources of degradation, significance of impacts, and areas of concern;
- to establish a database of the various species of fauna and flora with special focus on those appearing in the Annexes of SPA Protocol;
- to prepare the document relevant to the declaration of Damour River and Naqoura Bay as a National Specially Protected Area;
- to elaborate specific awareness and education materials on the selected specially protected areas such as brochures, posters and others;
- to elaborate concrete guidelines for management to assist municipalities and others involved;
- to build local capacities on management of the concerned areas;
- to elaborate proposals for a convenient and efficient institutional set up which could ensure the sustainability of the implementation of the thematic activity, including project proposals; and
- to provide the Ministry of Environment with scientifically-based technical, administrative and legal profile for the declaration of Naqoura marine and coastal area, and Damour beach and Damour River basin as specially protected areas.

For this purpose, the team proposed among others:

- to prepare the final workplan in which the team is expected to apply sustainable and integrated environmental management approaches, using the methodologies of Integrated Coastal Area Management (ICAM), of Integrated River Basin Management (IRBM), land- and sea-use planning as tools, the Best Available Technologies (BAT) and Best Environmental Practices (BEP);

- to prepare tools for follow-up actions for the sustainability of the activities after CAMP phasing out, to be applied at local and national levels such as provision of assistance (preparation of projects seeking international funding, training) among others;
- to prepare and / or adopt environmental quality criteria and / or standards and common measures;
- to prepare information on awareness documents and materials (at least one brochure and one poster for each of the two sites);
- to visit programmes implemented by other international organisations:
  - on sustainable agriculture and rural development (FAO);
  - on implementation of Pesticide Risk Reduction Project (OECD / FAO).

**Methodology of Work**

Each of the experts will put his findings in geographical, climatic, physical environment, ecological and socio-economic contexts. The use of standardised format will assist in homogenising the findings for comparison and rapid diagnostic purposes. Each of the experts will concentrate on assessing the biodiversity of his specialisation primarily based on literature (published and unpublished) and secondarily based on the conducted surveys which are meant to be implemented to fill gaps that are resulting from lack of information.

Each of the experts will highlight the key species, sensitive habitats and hotspots in order to serve the aim of declaring Damour and Naqoura protected areas. In addition to the status of different noteworthy species, the actual state of communities will be put in place for conservation purposes.

Each expert within his discipline in question will remain as objective as possible through the use of objective methods in each of the biotopes. The samples will be representatives of the whole area and they will constitute a mean of time saving and cost effectiveness. Especially that exhaustive methods will require time that may extends beyond the life of the project. Standardised field data sheets of baseline survey formats will be used by the scientific team. The specific methods that will be used by each of the experts are summarised below.

The integrated management of the designated sites (which is a complex process extending over administrative borders, sectoral jurisdictions and a multitude of socio-economic fields and is a mechanism for inter-institutional co-ordination and participation of stakeholders) should also be the result of used database and guidelines that are formulated by the analysis of information gathered by an integrated research approach where the team is planning to conduct collective field work in order to gain mutual support of disciplines. The experts will focus on socio-economic aspects of hot spot areas, for a better analysis and understanding of various impacts and benefits from applying SPA.

**Methods**

*Mammals*

Within the study areas there is a wide variety of habitat types such as riparian, ripisylve, woodlands, orchards, shrub-lands, grasslands, wetlands, etc., each with its own specialist animals. Each of these require a suite of survey methods to detect the animals present. Also, the intensity of use of each method to detect the presence of certain animals varies across the area. The methods are of variety and include: Scat collection, Sign search, Hair tubes, Opportunistic sighting and hearing, Spotlight, Nocturnal call playback, Elliott traps, Pitfall traps, Cage traps, Harp trap, Anabat detector. The traps will require to be placed along a transect which is based on setting up a single line that can be 200 metres, 300 metres, 400 metres or 500 metres long. All

these methods require the expertise of a professional specialist. Early spring and end autumn are the periods of choice for detecting mammals.

*Birds*

To census birds, the 20-minute point-count method will be used, whereby all species noted during this time period are recorded at different places and different times in the most characteristic habitats of a given area. This method is semi-quantitative and changes in abundance of a species are estimated by changes in the frequency of this species over a series of point counts. On days of heaviest raptor or stork movement, it is necessary on occasion to estimate the number of birds passing. At other times, birds are individually counted. In addition, some birds will be identified through capture in single-shelf mist-nets, during some diurnal and nocturnal surveys. Any time of the year will provide records of significant species, but spring will provide data on breeding and spring migrating species and full will offer information on autumn migrating species. If the study period fall in winter the winterers will then be recorded.

*Amphibians and reptiles*

A survey in the different biotope will involve sampling during spring and summer. A variety of methods are employed to sample the herpetofauna. Pitfall traps will be established at X sites in a variety of habitats. Each trap-line will comprise five 45 L buckets imbedded in the ground, spaced 5 m apart, with a 1 mm gauge wire mesh drift fence 30 cm high and 20 m long, passing over the centre of each bucket. Pitfall trap sites will be selected to sample the range of broadly-distinct habitat types within the area. Pitfall traps will be checked every morning and operated for varying lengths of time, ranging from two to four weeks. Transects 100 m long will be established at X sites, including most pitfall sites. Diurnal censuses will be conducted for reptiles along each transect. This will involve one person slowly walking along the transect, pausing at regular intervals, and recording the numbers of each species observed. Each transect will be censused five times during the following daytime intervals: early morning, late morning, midday, early afternoon and late afternoon.

*Invertebrates*

The survey method will be influenced by invertebrate groups to collect data. The general technique that will locate a wide range of invertebrates without the requirement of much specialised equipment and that can be used easily by non-experts is shown in the following table.

**Table 55: Methods for locating invertebrates**

| Method | Invertebrate types to be detected | Examples |
|---|---|---|
| Opportunistic | Many, but mostly large or colourful species, and parasites of humans | Butterflies, ticks, leeches |
| Systematic search | Wide range if all habitat types are searched, including some soil dwellers. Will not sample many flying insects, tree canopy species, or boring species very well. | Snails, slugs, onychophorans, earthworms, leeches, landhoppers, woodlice, slaters, spiders, scorpions, harvestmen, mites, ticks, millipedes, centipedes, springtails, cockroaches, termites, mantids, earwigs, grasshoppers, stick insects, leaf insects, beetles, ants, bugs. |
| Pitfall trapping | Ground surface dwellers, particularly more highly mobile species and life stages | Adult carabid beetles, grasshoppers, wolf spiders (Lycosidae), scorpions, ants, centipedes and millipedes |
| Light trap | Night-flying insects | Beetles and moths |

The traps will require to be placed along a transect which is based on setting up a single line that can be 200 metres, 300 metres, 400 metres or 500 metres long.

*Marine*

Point, line and belt transects are used to survey the substrate and sessile organisms such as invertebrates and benthos. A tape measure is laid along the substrate, at a given depth, usually fifty meters long. Then the tape is either walked or swum slowly and the substrate noted at given intervals. With the belt technique, the area to one side of the tape measure is surveyed, (usually with the aid of a quadrate). This allows a good picture of the environment to be drawn, including most species. With this technique, a team of divers may survey an area very rapidly, using only a few transects. The first diver will lay the line at the pre-designated depth. The second diver will survey for invertebrates, and then one or two divers will survey the substrate (it is sometimes necessary to identify algae). Lastly the final diver, or pair of divers will survey for fish using a 5 $m^3$ quadrate technique, and either they will collect the survey tape measure, or the first diver will return and collect it behind them.

*Watershed, Basin, Wetland*

Aqua-sampling method identifies watersheds and basins that are natural units for effective aquatic conservation. The expert may carry out rapid first assessments of entire basins, without regard to political boundaries. The assessments analyse natural physico-chemical and biological processes that are critical for the maintenance of biodiversity. The expert may require the assistance of other scientists representing a variety of disciplines, including ichthyology, botany, entomology, macro-invertebrate zoology, limnology and genetics. The scientists work in an integrated fashion that facilitates instant feedback and information sharing. Daily interactions make aqua-sampling highly efficient and different from serial surveys that do not share information or use integrated methods. The ultimate goal of aqua-sampling is to assess the biological and conservation value of a watershed based on:

- the heterogeneity of the habitats;
- a preliminary survey of the organisms that characterise each of these habitats; and
- the overall intactness of the habitats, and their capacity to support important biological resources and ecological processes.

Field collections are made to identify the organisms, but the size of the collections is minimal. Specimens are identified at the most appropriate taxonomic level (genus or species) in order to compile preliminary data about species diversity and composition.

At each sampling (field) Stations, biological and physical data are collected. These *stations* are the precise localities at which information is collected. The *sampling stations* are to be selected within a 0.25 km radius of each *geo-reference station*.

*Plants*

It is recommended to use a plant survey method based on quadrates as used by many scientific experts. The choice of quadrate size should be based upon the vegetation type that forms each strata of the survey. The table below lists examples of the major vegetation types with a recommended quadrate size.

**Table 56: Major vegetation types with a recommended quadrate size**

| Vegetation type | Description | Recommended quadrate size |
|---|---|---|
| Woodlands | Trees >2 m tall, single stemmed, canopies separated by < 20 x tree height | Nested Quadrates 20 m x 20 m and 10mx10m OR equal to 400 sq.m and 100 sq.m |
| Shrub-lands | Top vegetation layer often multi-stemmed, < 8m tall | 20m x 20m OR equal to 400 sq.m |
| Dry Grasslands | Top vegetation layer usually < 1m tall, most plants grass / reed-like shape; not subject to regular water logging | 10m x 10m OR equal to 100 sq.m |
| Wetlands | Ground subject to regular water logging | 10m x 10m OR equal to 100 sq.m |

Generally square quadrates are recommended as they are easy to set up. However, for the vegetation that is subject to survey, it may not be possible to set up square quadrates with the vegetation remaining uniform across the whole quadrate. This problem commonly occurs with roadside verges and stream bank vegetation types. Under these conditions it will need to alter the shape of the quadrate in an effort to keep the edges of the quadrate away from the edges of the vegetation type.

*Socio-economic, land-use planning*

This task will be hold by the Amwaj Al Bia'a and assistance of its specialised members. It will provide the elements of basic analysis important for setting action priorities whose intent is to ensure the protection and the sustainable conservation management of the selected sites. Pre-prepared field sheets will be used to gather information on the present state of the area's occupancy and the use of natural resources' exploitation systems and of the various impacts induced by man on his environment with emphasis on factors that are acting on the ecological integrity of the envisaged sites. Beside the field data sheets, visits to national and local administration are also essential for collection of information. Amwaj Al Bia'a intends to mobilise local people through implicating them directly in the data collection process.

*Workshops*

Workshop is a public participation method. It is also considered one of the used methods to reach the goals of the project since it brings the participants and the future management entities such as the municipalities to admire the effort done by the researchers, appreciate the highlighted resources and better understand the management guidelines. For the workshops aims will be developed, target audience and number will be defined and recommendations will be formulated.