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List of Acronyms

BR/RAC	Blue Plan Regional Activity Centre
CAMP	Coastal Area Management Programme
CDR	Council for Development and Reconstruction
EC	European Commission
ICAM	Integrated Coastal and Marine Areas Management
MAP	Mediterranean Action Plan
MEDPOL	Mediterranean Pollution Monitoring Programme
MED Unit	Coordinating Unit of MAP
MoA	Ministry of Agriculture
MoE	Ministry of Environment
NGO	Non Governmental Organization
PAP/RAC	Priority Action Programme Regional Activity Centre
SMAP	Short- and Medium- Term Actions Programme
UNDP	United Nations Development Programme
UNEP	United Nations Environment Programme
WB	World Bank

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Executive Summary

CAMP is the Mediterranean Action Plan programme for sustainable coastal management, which aims at addressing environment and development planning at local and national levels in the Mediterranean coastal areas. The geographic context of the programme being the Mediterranean marine environment and its coastal and watershed areas as it was defined by the Barcelona Convention. In 1995, the Contracting Parties to the Barcelona Convention at their nineth meeting adopted the decision to carry out a CAMP project in Lebanon. After initial contacts with the Ministry of Environment (MAP focal point), a MAP mission visited Lebanon, which lead to define the scope of CAMP-Lebanon to the South of Beirut, between Khaldeh and Sour. As a result to this mission, the PAP/RAC commissioned a team of consultants to conduct a feasibility study to assess the potentiality of implementing CAMP in three municipalities within the defined area, over a period of 2-3 years (between 2000 to 2002).

The study presents in its first section a general overview of the Lebanese coast. This is followed by a further in-depth study of CAMP-Lebanon with an emphasis on the geographical and socio-economic sectors as well as major environmental problems encountered in the area. Finally, activities are proposed in three selected municipalities to enable CAMP Programme to start on as a pilot project on the national level.

The Lebanese coastal stretch extends over 210 kms starting from Naqoura in the South and extending until Al-Kabeer River, which delimitates the border with Syria in the North. The coast is characterized by quasi-homogeneity of the environmental problems encountered all along the shore with a main concern towards water resources pollution and urban expansion.

Most of the coastal urbanization is located towards the Northern part of Beirut, with a high density of industrial zones, private beaches and hotel resorts invading the remaining agricultural lands. The industrial sector is considered as a major source of marine and water sources of pollution. Around 20.000 units are located with many of them having no legal permits or located in non-industrial zones. Moreover, the scattered distribution of a larger number of industries all over the coast resulted in coastal settlements, and lead to

the privatization of public domains and huge construction all along the shore. Tourism is concentrated mainly in Beirut and its surroundings mainly in the form of summer resorts despite of the status of water estimated to be highly polluted. However, the privatization of beaches and the devastation of the coastal area by huge tourist complexes as well as industrial plants are not helping in designing a sustainable touristic development plan on the coast.

Agricultural plots are gradually replaced areas 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 reduced dramatically mainly due to overgrazing charcoal production and urbanization. Natural woodland vegetation remains in very few coastal areas, including slopes close to Kalb, Damour and Awali Rivers. Freshwater fauna is believed to be suffering from pollution, given prevailing pollution of Lebanon's rivers.

So far no preventive measures have been adopted by the government to protect marine resources. Water sources are subject to serious pollution due to industrial and collective wastewater discharged directly into the sea, and to the presence of open solid waste dumps (Tripoli, Saida, and Beirut). Fecal coliforms were highly detected in sample analysis taken during the bath season. As for marine fauna, dredging, pollution and over exploitation have all led to decreased stocks.

Air pollution is believed to be concentrated along the coast primarily due to the concentration of Lebanon's inhabitants in these same areas, as well as prime point sources (power plants and industrial plants). Moreover, very little information is available regarding air pollution levels on the coast except few measurements recorded near Jyeh and Zouk power plants and Chekka cement factory.

On the regulatory and institutional level, the present legislative tools are old and very much outdated. A framework law for an integrated coastal management is still absent, being so far substituted by ministerial decisions promulgated to regulate sectoral issues namely solid waste management and quarries. The protection and management of the coastal area are the responsibility of many ministries and public agencies. Overlapping of

duties among these institutions and the lack of proper enforcement and implementation mechanisms are adding to the degradation of the coast and its resources. Added to that are the administrative constraints that are constantly facing the civil servant staff, such as low salaries and the weaknesses in some expertise dealing with environmental issues. On the other hand, municipal elections were performed in 1998 giving place to a new motivated staff, which needs proper technical and legislative back up to implement properly developmental projects in a sustainable manner.

It is to note that a number of projects commissioned by UNDP, EU, World Bank, and others are currently or planned to be executed on the coast on issues related to natural resource conservation, economical and social rehabilitation, agricultural infrastructure development, treatment facilities, etc. However, an absence of coordination among these projects during the formulation/ implementation phases is perceived. Moreover, the level of intervention of most of these projects is rather targeting the national level rather than local authorities, and remains with no provisions towards demonstrating the possibility to carry out a capacity building programme into an integrated programme that focuses on coastal resources management.

In this overall context, CAMP area occupies around 615 km2, or almost 6 percent of the total Lebanese territories. However as a coastline, the study area stretches 85 km, or 33 percent of the total 256-km. The study area contains a significant proportion of the inhabitants, and consequently its economic, social, educational, and other sectoral activities. Although it is an area where development pressures are not currently as high as in some other parts of the Lebanese Coastal area, the same environmental pressures are perceived. And it is expected that in the near future these pressures will rise, unless some preventive actions and initiatives are carried out in the short and medium term, especially when considering the potential evolution of the geo-political situation in the region.

After consultation with various stakeholders, CAMP area was narrowed down and eight municipalities were identified and deeply studied for potential implementation of the coastal programme, and these are: Aramoun- Ain Ksour- Basatin; Damour; Jiyeh; Chheem; Saida; Naameh; Sarafand; and Borj Chemali. Out of these eight hot spots, CAMP areas' selection was based upon several criteria, the presence of a major economic sector in the selected municipality being a basic requirement. The presence of a secondary

activity and its equivalent resources form an additional input to the project and promote the application of intra-sectorial solutions and management plans in the pilot project. Other criteria are: the presence of major environmental problems; the impact of the different sectors on the environment; the status of the municipality (including the local institutional capacities; the level of harmony in the decision making between the municipality members; the type and value of local collaboration/ contribution; the contacts and the collaboration with the neighborhood; degrees and measures of future collaboration); the local inhabitants, their social activities and their collaboration with the local authorities. The conditions of applying the pilot project in the municipalities depend also on the need of the town to the CAMP project and the level of its impact on the neighborhood as being a pilot project. Added to this, is the impact of the development programs and capacity building of CAMP in the selected site; also, the degree of collaboration that the local authority is planning to work with MAP components, and the municipal input (local facilities, financial and human contribution, etc.). With these conditions, and bearing in mind MAP directives, three pilot municipalities are selected, are Damour, Sarafand and Saida.

Damour is characterized by its strategic geographical location, being on the coast and the beginning of the Chouf mountain area and the South of Lebanon. It is one of the first villages to suffer from massive displacement, with very few inhabitants yet to return. The major economical activity is agriculture, however the city suffers from severe water pollution coming from upstream areas. CAMP implementation is expected to have a very positive impact due to the institutional capacity and incentives, and its richness in agricultural areas, forests, sandy beaches and marines resources; the location of Damour River which passes through many villages in the Chouf being an important asset.

The Municipality of Sarafand appeared to have very interesting characteristics on the level of the available natural and human resources. In addition, the historical importance of the village is a good incentive for the preservation and the management of this area. On the other hand, the severity of environmental problems such as waste water discharges into the sea with no prior treatment, and the proximity of residences to these effluents discharge points and their health risks, and the hasty conservation of maritime public domains are issues determining to prioritize Sarafand among the three selected

municipalities. CAMP execution would have a good impact due to the availability of a good economic tool, namely the fishing sector.

Saida is the largest city in CAMP-Lebanon area, and the third largest in Lebanon. The city encompasses around 103 industries, mainly artisanal of high touristic value. Ruins such as the sea castle, the Khan, Ashmoun, Salaheddine Palace, etc. are of national importance. Among the most prominent planned projects are the sport arena, the renovation of the old city, and a two-hectare public garden. Major problems are the coastal dumpsite, the sewage system that discharges directly into the sea with no prior treatment, the lack of green areas, and most of all the lack of a master plan that would solve all relevant problems in an integrated manner. Despite the presence of an active municipal council, a need was observed to build and provide the council with the necessary technical capacities in issues related to industrial management, coastal management, orientation towards applying best techniques, etc. Being the center of a union that is composed of seven other municipalities, the implementation of CAMP would have a good impact on the surrounding area.

After a thorough study of the local situation, it was suggested to carry out the project with the objectives: to introduce and integrate the concept of sustainable development of coastal resources in the activities of local communities; to increase capacity building on the national and local level in issues relevant to coast zone management; to determine environmental development problems on the coast and suggest adequate remedial measures; to prepare coastal zone management plans; to exchange experiences at different levels (local, national and international); and, to assist in identifying sources of funding necessary to implement short- and long-term development activities. By playing a catalytic role, MAP strategy in CAMP-Lebanon will ensure translating nationally and locally the decisions made mainly by the Contracting Parties meetings, the Mediterranean Commission on Sustainable Development (MCSD) thematic groups outputs, and MAP focal points.

It is to note that although Lebanon was signatory of the Rio Declaration in 1992, sustainable development is still a relatively new concept. The establishment of a local agenda 21 in each of the selected municipalities will assist in ensuring coordination, implementation and follow-up of the various activities formulated and suggested

according to the priorities set by the municipality itself. These activities would include issues relevant to: capacity building and technical assistance pertaining to the management of coastal zones, river basins, forests, solid wastes and awareness activities, as well as establishment of an environmental data base, and the identification of fundraising sources.

As MAP will directly manage the activities, the project will be co-managed by the Ministry of Environment. This latter will play also a coordinating role among the different institutions concerned by coastal management issues (Ministry of Transport, Directorate General for Urban Planning, etc.) and eventually will ensure the sustainability of CAMP experience in other local authorities. Concerned municipalities will contribute in kind to the project and consequently will assign a counterpart for follow-up. As the main objective of MAP is to contribute towards national capacity building, national experts and NGOs will execute the various activities, in a close collaboration with MAP technical Centers.

INTRODUCTION

CAMP is the Mediterranean Action Plan Programme for sustainable coastal management, which aims at addressing environment and development planning at local and national levels in the Mediterranean coastal areas; the geographic context of the programme being the Mediterranean marine environment and its coastal and watershed areas as it was defined by the Barcelona Convention.

In the 1990-98 period, two cycles of CAMP were implemented and a third cycle started with the preparation of projects in Algeria, Lebanon, Malta, Morocco and Slovenia. Accordingly, the process of consultation for the preparation of CAMP-Lebanon began in early 1998. Extensive discussions were held with the concerned stakeholders namely the Ministry of Environment (MoE), the Ministry of Transport (MoT) and the Council for Development and Reconstruction (CDR) in the context of establishing a common strategic action plan for coastal zone management in Lebanon.

CAMP-Lebanon is intended to highlight UNEP-MAP future assistance to the management of coastal zone in Lebanon, in support of national development goals in a way that is consistent with MAP mandate. The main objectives of CAMP-Lebanon feasibility study are to:

- Provide an overview on the current situation of the coastal area in Lebanon in general, and CAMP area in specific;
- Assess the possibility of implementing a MAP coastal area management programme, taking into account the various projects implemented/ to be implemented; and,
- Provide a set of activities/ recommendations for implementing a sustainable coastal management programme in Lebanon by selecting pilot areas with different problematic and stakes, mainly from an environment and management point of view.

Finally, it is to note that the purpose of this feasibility study is not to provide an additional programme that might overlap with other currently planned or executed projects' objectives and/or activities, but rather to secure a "bottom-up" approach initiative that would ultimately develop and strengthen national capacities in the context of establishing sustainable management programmes in coastal areas of Lebanon.

CAMP-Lebanon in the Context of MAP overall strategy

The Lebanese Coastline is considered one of the areas mostly affected and degraded during the war and post-war period due to uncontrolled urban expansion and economic pressure. Privatization of public properties and beaches, replacement of agricultural areas by human settlements, scattered industrial zones, bad urban planning and lack of proper regulatory enforcement are some of the main problems that face the implementation of a sound management programme for the coastal area in Lebanon. Issues have been raised and partially solved on a sectoral management level (e.g. solid waste management) but little has been planned on an integrated management level.

The Mediterranean Action Plan (MAP) which mandates the achievement of sustainable development in the Mediterranean, holds among its objectives the concept of introducing the Integrated Coastal Area Management (ICAM) and the implementation of the Coastal Area Management Programme (CAMP) in chosen national sites according to preset criteria that comply within both the MAP and the national context.

The Contracting Parties to the Barcelona Convention at their nineth meeting (Barcelona, 1995) adopted the decision to carry out a CAMP project in Lebanon. After initial contacts with the Ministry of Environment (MAP focal point), a MAP mission visited Lebanon on March 22 to 25, 1999, during which a preliminary decision took place for the urgent need to establish a CAMP pilot project in Lebanon. Advanced discussions lead to the decision to conduct this project in the area located to the South of Beirut, somewhere between Khaldeh and Sour (Tyre). Two to three municipalities with different problematic and stakes (mainly from environment and management point of view) would be selected for an in-depth study.

As a result to this mission, the PAP/RAC commissioned a team of consultants to conduct the CAMP feasibility study, which results are expected to end up to the formulation of a Coastal Area Management Project implemented over a period of two to three years (between 2000 and 2002).

The following potential partners could be as appropriate involved in the CAMP- Lebanon formulation and implementation phases:

1. The Mediterranean Action Plan, which will participate through the following technical centers:

- Coordinating Unit for MAP (Athens);
- Priority Actions Programme/ Regional Activity Center (PAP/RAC);
- Regional Marine Pollution Emergency Response for the Mediterranean Sea (REMPEC);
- Pollution Monitoring and Research Programme (MED POL);
- Specially Protected Areas/ Regional Activity Center (SPA/RAC);
- Center for Historic Sites;
- Cleaner Production Center (CP/RAC);
- Remote Sensing Center and
- Blue Plan/ Regional Activity Center (BP/RAC).

2. The Ministry of Environment, which will act as the National Coordinator of the project;

3. The potential three selected municipalities identified throughout this study. The concerned local authorities will be actively involved in the formulation, preparation and implementation of the project. It will also be ensured that these municipalities contribute at least in kind in order to secure continued commitment.
4. The other national institutions such as Ministry of Transport, Ministry of Interior, etc.
5. The collaboration with other international programmes and institutions. A number of projects commissioned by UNDP, World Bank, METAP, CEDARE, EU, WWF and NGOs are currently or planned to be executed in the selected area by CAMP- Lebanon study. Therefore, coordination shall be secured among concerned institutions to avoid any duplication or overlapping in the proposed activities.
6. Other stakeholders such as representatives of economic sectors, cooperatives, farmers, fishermen and others living in the project area will be targeted.

The Programme of the Mediterranean Commission for Sustainable Development (MCSD) will be highly taken into consideration.

The scope of CAMP-Lebanon extends from the South of Beirut, between Khaldeh and Sour (Tyre). It is an area where development pressures today are not as high as in some other parts of the Lebanese Coastal area. However, it is expected that in the near future these pressures will rise. Consequently, any proposal today might be less destructive and as far as possible will remain within the limits of sustainable development.

The team of Consultants shall conduct the following:

- To conduct a survey of the existing information related to the integrated coastal management in Lebanon, in particular to ICAM in the coastal regions of the country.
- To inventorize and summarize the past, on-going and planned projects, plans and programmes in coastal area management and ICAM in Lebanon. A particular reference would be reserved to the initiator of the initiative (local, national or international), local and national partners, title of the initiative, the coastal area concerned, the plan briefing, programme or project, approximate cost of the project (national and international), current status of the project and the follow-up of the completed project.
- To present national strategies and policies relevant to the sustainable development of the coastal area of Lebanon. The team of consultants will have to explore the policies, strategies and priorities not only of the Ministry of Environment, but also of other concerned ministries (Agriculture, Transport, Tourism, Public Works, Energy, Water Resources, etc.) whose activities are part of or touching upon the sustainable development of the coastal area as well as ICAM.
- To present the institutional structure at national and local levels dealing with the coastal management issues.
- To summarize the legislative issues related to the ICAM and the effects of its implementation.
- To define the CAMP area and describe its geographic characteristics.
- To summarize the socio-economic and environmental context of the proposed area in general, and of each of the coastal cities in specific. The issues should be divided into resources (natural, man-made), activities (agriculture, industry, energy, urbanization, transport, tourism, etc.) and effects of activities on the environment (pollution,

resource exploitation, negative physical effects, resulting sustainable development patterns, assessment of potential negative trends, etc.).

- To describe and assess the existing local institutional structure to deal with ICAM issues. All actors (including NGOs and other organizations) should be investigated. Also their capabilities to carry out or participate in the CAMP should be assessed.
- To investigate other locally or nationally generated initiatives related to coastal zone management, urban and regional planning, resource management, institutional development, and others. Coastal plans and programmes, land-use plans, local policies and strategies, capacity building initiatives and other issues should be analyzed and reported. Besides, their possible utilization in the project shall be assessed.
- To outline the objectives, the global framework and the nature of the CAMP Lebanon (concentration on the description of the nature of collaboration of local, national and international experts with local municipalities).
- To outline a list (with short description) of the activities needed to be undertaken within CAMP from a point of view of national or local interests, based on the elements used in the delimitation of the CAMP area, and the environmental and developmental issues relevant to that area.
- To outline the criteria on the basis of which list of priority activities of CAMP are prepared (global and prospective nature, activities related to specific resources, etc.). Some activities of global and prospective nature would be considered, while others would relate to specific resources, activities and effects.
- To describe possible CAMP outputs such as Local Agendas 21, coastal land and sea-use plans, management plans, project proposals, remedial actions, capacity building, prospective studies, databases, indicators, contingency plans, etc.
- To provide arguments in favor of the CAMP Lebanon, using the MAP justification for CAMP. Indicate the national and local interests in pursuing the CAMP implementation.
- To assess the national and local experts and institutional capacities for the CAMP implementation.
- To assess the needs for raising environmental awareness, education, training and other forms of capacity building in the CAMP area.

- To present the organization of work within the CAP, and propose national, local and thematic counterpart institutional structure, which could be tied to the MAP structure (MEDU and RACs).
- To present a realistic timetable for the CAMP activities (activities to be limited to 2-3 years of duration).

CAMP feasibility study methodology

To fulfill the duties and objectives defined in CAMP terms of reference, the team of consultants:

- Elaborated in brief the current natural, institutional and regulatory situation pertaining to the Lebanese coastline;
- Described CAMP area and the major threats to the environment;
- Identified areas of high relevance to CAMP objectives; and,
- Proposed a set of activities to be implemented in the context of putting in place a local agenda programme (Agenda 21, UNCED, 1992).

In order to achieve these tasks, representatives of local and central government, non-governmental organizations, international agencies and private sectors were met. Extensive research work was conducted. Also numerous field visits were conducted all along the coastal area defined by CAMP.

CAMP-Lebanon feasibility study is divided into four sections:

- The first section includes an overview on the Lebanese Coastal area, the existing documents relevant to coastal zone management in Lebanon, and an inventory of the existing or planned projects to be implemented on the Coast. It reviews the institutional and regulatory framework pertaining to coastal zone management.
- The second section presents the area to be covered by CAMP-Lebanon, with a general overview on its geographical and socio-economic context, as well as the major environmental problems encountered.
- The third section presents the selected and proposed sites where CAMP- Lebanon will be executed, along with the implementation criteria and suggested outputs.
- The final section will suggest CAMP organizational chart, programme activities as well as the timetable that will enable CAMP- Lebanon to start on.

Section One

The Coastal zone in Lebanon

Introduction

The "Regional Environmental Assessment Report of the Coastal Zone in Lebanon" (REA Report) defines the Lebanese coastal zone as "a 16-km wide sea-land corridor along the Lebanese coastline (8 km on either side), with some exceptions: about 15 km off the coast of Tripoli to capture the Palm Islands and about 10 km inland north of Tripoli and east of Sour (Tyre) to capture agricultural plains". Based on this definition, this chapter highlights the main features of the Lebanese coast, reviews the institutional and regulatory framework, and presents the major projects and activities planned or executed in the coastal zone of Lebanon.

1.1 Geographical and natural context

Situated between 33º35ºN and 36º36ºE, the coastal stretch extends over 210 km starting from Naqoura in the South and extending until Al-Kabeer River, which delimitates the border with Syria in the North. The climate ranges from mild and humid in the North and Beirut to sub-tropical in the South. Average annual temperature is equal to 20ºC with an average relative atmospheric humidity of 68 percent and an annual precipitation of 741 mm.

A narrow continental shelf and accidental bottoms characterize the coast, which is jagged by sub-marine canyons as a prolongation of terrestrial valleys. The REA report describes the Northern shelf as the widest (about 12 km), being narrow in a north-south axis, and wider again to about 6 to 8 km. Around 12 promontories were identified, composed mostly by either Cenomanian Dolomitic limestone or Miocene deposits.

The Lebanese coast is directly exposed to open sea swells, except for some sheltered bays. Reported observations show tides with extreme weak amplitude at 15 to 20 cm. The biodiversity Country Study Report stated that sea water in Lebanon is oligotroph with

minor concentration in nitrates, phosphates and silicates indicating a weak primary productivity and a poor biomass. This deficiency in salty nutrients has a big influence on the structure and composition of coastal and marine ecosystems.

Coastal and marine fauna and flora are considered of the Mediterranean type with a sub-tropical tendency. Many habitats were recorded all along the coast: rocky, sandy, silty, coastal, neritic and oceanic. The Biodiversity Country study described widely the presence of high rates of bacillariophycea and Dinophyceae. Marine flora includes mainly benthic algae (microphytes and macrophytes). However, little research was conducted on their taxonomy, distribution and abundance on the Lebanese coast.

Little information is available on the coastal vegetation. REA Report pointed out to the presence of several combinations made up of five various woodlands. These woodlands range from rocky low altitude macchia (*Ceratonia siliqua, Olea oleaster, Myrtus communis, Rhamnus palaestina, etc.)*, to loamy calcareous soils (*Pinus brutia, Cupressus sempervirens, Quercus calliprinos*), to small *Pinus pinea* woods. The ripisylvian woodlands were found on the slopes of mountain valleys (*Fraxinus ornus, Platanus orientalis, Quercus infectoria*) and reaching woodlands of different deciduous oaks found on an altitude above 600 meters.

Deep valleys remain the last natural sites to link the mountains and the seashore (Nahr Ibrahim, Nahr Damour, Nahr Awali, etc.). As a total, around 14 rivers were identified in the REA Report with an amount of 2000 million m^3/year of freshwater discharged into the Mediterranean Sea, including the Litani River, which irrigates the southern Bekaa plain and crosses Mount Lebanon before discharging into the Mediterranean. The longest coastal river is Al-Kabeer River (58 km). Most coastal rivers nowadays completely dry during the summer, such as Nahr Awali and Nahr el Kalb where water is diverted for industrial and residential use. For that purpose, the Ministry of Environment promulgated a series of decrees to protect and regulate human activities in this concern.

The only protected area declared by-law all along the coast is Tyre Beach. The site is the only remaining sandy beach located to the South of Tyre in the South of Lebanon. It owes its specificity to the presence of artesian springs with high flows and for the breeding of the Mediterranean Sea Turtle. The site, consisting of public land, has been protected as a

reserve, which did not actually result in its safeguard. It is being used illegally by numerous farmers and their families. Buildings and development projects linked to tourist frequentation in the vicinity of Sour (huts, beaches, restaurants) are on the increase. The implantation of the Palestinian Refugee camp of Rachidyeh also causes important effects. Although illegal, sand extraction for construction goes unabated.

1.2 Socio-economic context

No doubt that the coastal cities encompass the majority of the Lebanese population in main cities like Beirut, Saida, Tyre, Tripoli, Jbeil and other sub-district centers. Statistics report of the coastal zone in Lebanon showed that 63 percent of population are located in coastal central Lebanon; while the North includes 23 percent and the South 14 percent.

The coastal zone covers around 16,000 hectares of the Lebanese territory subdivided according to the boundaries of the four Mohafazats of the North, Mount Lebanon, Beirut and the South. Most of the coastal urbanization is located towards the Northern part of Beirut, with a high density of industrial zones, private beaches and hotel resorts envaded the remaining agricultural lands. The North includes the longest industrial stretch of the coast (10 km) with cement, fertilizers and other plants, followed by a concentration of private beaches resorts, bounded by Akkar agricultural plain. Mount Lebanon and Beirut are characterized by a continuous urbanized strip with office buildings, shopping centers, commercial and entertainment activities and private beach resorts. The Lebanese Capital is delineated by Ouzai district, which encompasses the largest concentration of war-displaced population and illegal settlements. The Beirut International Airport expands to the sea. Agricultural areas are more preserved towards the South, like in Damour, Jiyeh, Saida, Sarafand and Tyre. It is characterized by lesser-urbanized stretch with a concentration of archaeological sites and predominant citrus, bananas and vegetable exploitation. Tyre City delineates the southern border of the study due to the Israeli occupation in the South, with very minor information recorded.

REA Report presents the land use percentages of the Lebanese coast over almost 200 km of length. The urban areas stretch over 50 km of the coastline (21%), while beaches and dunes cover a total length of about 49 km (20%) and bare rocky outcrops 11 km (4.7%). Fruit trees on wet soil (primarily citrus groves) border the coastline over 34 km. In

addition, larger industrial or commercial units occupy about 24 km (10%), tourism resorts about 18 km (7.5%) and ports 13 km (5.3%). Salines border the coastline over a stretch of 6.7 km.

Finally, during the war, numerous illegal structures were built along the coast, including in the maritime public domain. As of January 1995, around 250 ha of land or water were illegally occupied, the majority of these violations occurred in the Northern Lebanon (132 ha), followed by Central Lebanon (91 ha) and the South (15 ha) (REA Report).

1.2.1 The industrial sector

The industrial sector is considered as the major source of marine and water sources of pollution in Lebanon. During the war, many industries were established without any permit while others obtained permits to be located in non-industrial areas. Around 20,000 units are located in the coastal zone.

The cement production sector includes three plants in Chekka (to the North) and another cement plant in Sibline (to the South). Around 13 tanneries are based in Dora and Jounieh within an industrial zone, while 7 tanneries are found in Saida. Moreover, the scattered distribution of a larger number of industries (cement, electro-plating, fertilizers, food processing, tanneries, textiles, etc.) all over the coast resulted in coastal settlements, and lead to the privatization of public domains and huge construction all along the shore.

Among the constraints caused by the war on the industrial sector, are damaged production infrastructure, lack of funds for investments, decrease in self-finance capability, decrease in demand for Lebanese manufactured products, decrease in productivity and increase in productivity costs (REA Report, 1997).

1.2.2 The tourism sector

Tourism in Lebanon is based on a mixture of beaches and mountains, with skiing in the winter months and the presence of a large number of archaeological and historical sites (State of The Environment Report, 1995). Together with the

agricultural sector, they used to provide 25% of GDP. Since 1972, pleasure trips were considered as the main reasons to travel to Lebanon (84% of touristic stays), mainly for Gulf and European countries. Nowadays, international business tourism is the main source for international tourism of Lebanon (75% of Beirut hotel frequentation). And it is expected to increase to a large extent in the coming years.

Data on tourism activities are weak. But it is estimated that about 400.000 tourists came to Lebanon in 1995, compared to 1.9 million visitor arrivals, including 500.000 Syrians in 1974. A survey done in 1991 by the National Council of Tourism showed that the stock of accommodation had fallen to only 6.630 rooms, out of which 1.660 were in Beirut itself and 3.195 in the Mount Lebanon area; while in 1974 the total number was 14.390 including hotel rooms, pensions and apartments. In 1997, tourism output was around 1 milliard dollar and it slightly increased to reach 1.300 million dollars in 1998 (which corresponds to 6-8% of the gross national product). It is to note that most, if not all tourist activities (except the archaeological sites) are in the hands of the private sector.

At the end of the war, the Government set a ten-year reconstruction plan designed to rebuild the necessary basic infrastructure damaged during the war, taking into account the economic and social constraints. This investment programme started in 1993 and will last until year 2002. Unfortunately, the tourism sector is not considered as a priority within this plan, since only 190 million dollars, out of 11.7 milliards dollars, are to be invested by this sector (which is equivalent to 1.6%), during the period 1998 till 2002. Moreover, the privatization of beaches and the devastation of the coastal area by huge touristic complexes as well as industrial plants are not helping in designing a sustainable future for the tourism sector as a growing industry.

1.2.3 The agricultural sector

Agricultural data are not well recorded. However, the REA Report stated that around 138.000 ha of land were cultivated in the coastal area, to a large extent in the North and the South. Several agricultural plains exist all along the coastal stretch encompassing from north to south Akkar (approximately 10.000 ha), Minieh (2.000 ha), Tripoli (500

ha), Koura, Batroun (200 ha), Nahr el Kalb (50 ha), Damour (500 ha), Saida (800 ha), Qasmieh (5.000 ha), and Sour. According to the same sources, the largest agricultural block is the plains extending from Ghaziye (in the South of Saida) to Naqoura (near the southern border), covering a total surface area of about 14.600 ha (32 percent of all agricultural areas in the coastal zone), followed by the Akkar agricultural plain (about 1.150 ha) and the Nahr Abu Ali valley (6.400 ha).

The extent of replacement of agricultural areas by industrial and human development is quite obvious. Citrus, bananas and vegetables are being reduced especially with the absence of a clear national policy to guide and enforce the domestic agriculture production. The extensive use of pesticides and the expansion of greenhouses are highly noticed all along the coast, especially to the North of Beirut (Jbeil, Batroun, Chekka), Mount Lebanon (Damour, Jiyeh), and the South (Ghaziyeh, Zahrani, Sarafand, Sour, etc.). Rural depopulation is worsening the case. It is expected that the coastal agricultural plains of Mineih, Nahr Ibrahim, Damour and Saida would lose their agricultural function within 10 years, the plains of Tripoli, Batroun and Nahr el Kalb could be lost sooner.

1.2.4 Fishing

Fishing statistics are rare. Lebanon count 3000 to 4000 fishermen, not all of them are Lebanese and not all rely exclusively on fishing as a source of income. They are distributed over harbors of Tripoli, Byblos, Jounieh, Beirut, Saida, Sarafand and Sour. Estimates on fish catches from the sea range from 3000 to 6000 ton per year. According to the Ministry of Agriculture, it was estimated that around 6000 ton of imported fish per year was recorded for 1997/1998, equivalent to $US 30 million per year. A complete study conducted by the Ministry of Agriculture is expected to give a clearer overview about this sector.

Lebanese fishing is entirely artisanal or traditional. Dragnet, trawl line, and fishing lamps are the main fishing equipment used, even though law prohibits trawl line. The Lebanese fisheries have suffered considerably during the war. Explosives and Lindane were considerably used. The Biodiversity report stated that 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. Unfortunately, no preventive measures have been adopted by the

Government to protect marine resources though the Lebanese Army control has reduced considerably the use of explosives.

The Post-Conflict Programme for economic and social rehabilitation in South Lebanon summarized the main problems encountered by fishermen as follow:

- The lack of security and delimitation of fishery zone to 3 km to the south of Sour.
- The risk of marine resource over-exploitation (for the number of boats and equipment is increasing while the fishery zone is always limited).
- The monopolization of the fish market in Lebanon;
- The churlissness of harbor management, which is not provided with any conservation tools;
- The lack of hygiene while handling catches;
- The lack of any perspective leading to modernization, diversification or any other types of projects;
- The low income of fishermen (US$ 200) for families of 6 to 7 persons;
- The lack of social security for fishermen.

1.2.5 Transport

One major problem of the coastal area is the traffic densities, which are very intense in some specific spots of the network, particularly around Beirut where the traffic volume exceeds 150,000 vehicles per day, as recorded, on the coastal highway to the north and the south of Beirut. The status and conditions of the road networks are in many cases the main reasons for worsening this fact.

1.3 Environmental context:

The sectors mentioned above had all serious and negative impact on the environment. Water sources of the coast are subject to serious pollution due to industrial and collective wastewater discharged directly into the sea, and to the presence of open solid waste dumps (Tripoli, Saida, Beirut). Fecal coliforms were highly detected in samples analysis taken during bath season.

The rapid recovery in the tourism sector is likely to have mainly an impact on the environment through the accelerated denationalisation of the beaches and the development of holiday accommodation on the coastal zone. Moreover, skiing industry is threatening the mountainous environment through the direct damage to the soil and the flora in the higher mountain areas, the pressure of people, the land take for ski lodges and physical infrastructure, added to that the possible deterioration of the air quality in the mountain areas, as most skiers visit their destination by car. In addition, the seasonal nature of tourism imposes a stress on the environmental services, such as the demand for water and the generation of liquid effluent and solid waste.

Also construction activities and agricultural practices led to soil dredging, excessive ground water pumping, uncontrolled private tapping of the water resources, soil erosion, noise pollution due to quarries and traffic, landscape degradation, and so on.

Finally, little of the available information regarding air pollution levels on the coast were based upon measurements of the ambient sulfur dioxide near the Jyeh and Zouk power plants and Chekka cement plants that were taken at different sea levels. Chekka cement plant showed the highest records with 608-643 μ/m^3, while 241-386 μ/m^3 was recorded in Jyeh and 156-541 μ/m^3 in Zouk.

Further details of major coastal environmental issues are provided in the table below (source- REA Report).

Sectoral review of coastal environmental issues

Sector	Issue
Agriculture	No measures are taken to protect agricultural land. Improved irrigation is accompanied by excessive use of water and pesticides.
Fishing	Fishing ports are built without regard for environmental considerations. Data on fish stocks and catches continue to lack. Fishers have no access to credit facilities.
Industry	Constraints on industrial development persist. New industries locate in coastal areas. Continued non-compliance with water, air and soil pollution standards.
Construction	Construction permits granted in sensitive natural areas, and more generally in unplanned areas. New permits for conditional use of the maritime public

	domain further restrict access to the beach. Proposed waterfront projects implemented without proper EIA
Energy	With no incentives for conservation, energy consumption continues to grow at high rates. Lack of public transport and of proper car inspections increase air pollution loads from the transport sector. No oil spill contingency plans implemented.
Water/ wastewater	Construction of new sewer lines continues to lag behind urbanization and population growth. Unsewered areas continue to pollute water and land resources. Collected sewage receives preliminary treatment at best (i.e., the removal of large solids). Sewage flowing into the sea is as polluting as raw sewerage but without the large solids.
Solid waste	Landfill sites were identified. However, solid waste continue to be dumped at sea in major cities (Beirut, Tripoli, Saida) and in ad-hoc dump sites alongside mountain roads. Existing dump sites either expand, encroaching on more sea or land, or close down while new locations are used for dumping. In Beirut, closing of the Borj Hammoud site leads to another "ad-hoc" dump site either at sea or inland.
Transportation	Insufficient public transportation, traffic congestion, and air pollution, especially in Greater Beirut Area. Ribbon development along old and new highways.
Tourism	Insufficient measures to protect natural and archaeological sites and beaches. New tourism resorts close off large stretches of prime beach front for private use.

Source: Regional Environmental Assessment Report on the Coastal Zone of Lebanon- CDR- 1997).

1.4 Socio-economic case study: The displaced

Between 1975 and 1990, the civil war and the Israeli invasion damaged not only the basic infrastructure, economy and education, but overstepped to reach the inhabitants. Around 800,000 persons were obliged to leave their houses behind for security, political or social reasons. A report on "the Displaced in Lebanon: Return Strategy and Development" that was presented in the Cultural French Center in Beirut in February 1998, stated that around 60 percent of the displaced were located in Mount-Lebanon with 55,769 displaced (mainly in Cazas of the Chouf, Aley, Baabda, Metn, Kesrouan and Jbeil), followed by 21,305 displaced recorded in the South (not included within the Ministry of Displaced

programme). The coastal area – within the 8 km in depth- was badly affected particularly due to the general economic failure translated through rural exode, agricultural land losses, destruction of the industrial sector (tourism included), job losses, etc., among other factors. In 1994, the Parliament issued the Law no. 333, which allocates a budget amounting to 814.5 Billion Lebanese Pounds for the execution of a three-year project in the displaced area. Achievements included infrastructure rehabilitation, building evacuation and rehabilitation, etc. However, villages' reconstruction were carried out in the total absence of master plans, thus creating a widespread chaotic landscaping with no respect for the natural environment neither for the architectural regulations.
On the other hand, the Ministry of Displaced launched in collaboration with the UNDP and the United Nations volunteers a programme on the re-integration and the socio-economic rehabilitation of the Displaced" (called in Arabic Aïdûn), a programme that is entitled to rehabilitate social and economical services (presented later in further details).

1.5 Institutional framework

The Coastal zone legislation questionnaire prepared by PAP/RAC in 1998 gave a coherent description of the institutional structure of the Lebanese Government. According to the questionnaire, decrees and laws are submitted by the Minister in charge to the Council of Ministers for approval. Laws are passed by the National Parliament where specialized parliamentarian committees study them before adoption. In 1994, the Council of Ministers was authorized to issue decree-laws without the Parliament prior approval. Before issuing, all project laws and decrees are subject to advice and consent by the Government Advisory Council (general notification no. 24/96 of year 1996).

On the other hand, the Council of Ministers is the body authorized to approve all development projects at the national level. The execution is carried out through the ministries in charge, governorates and/or municipalities. However, since the Council for Development and Reconstruction (CDR) replaced the Ministry of Planning (Decision no. 5 in year 1977), it became the national executing agency for all national development projects (especially internationally funded ones).

With regard to the coastal area, the protection and management of the coast is the responsibility of many ministries, public agencies, research institutions and NGOs.

Unfortunately, these responsibilities are scattered and lack proper enforcement and implementation mechanisms. Add to that, the administrative constraints that face the civil servant staff, such as the low salaries, and the lack of adequate experts dealing with environmental issues; a fact that keeps environmental considerations out of national and regional policies and projects.

The main ministries dealing with coastal area management are:

1- *Ministry of Environment*: The MoE was established in 1993 (Law 216) 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, and preserve marine and coastal areas in a way to ensure the protection of the environment. In 1998, the MoE constitution law was modified to increase the number of its departments to five. However, functions and duties still undergo duplication and overlapping with other ministries. After the election of the new Cabinet, the MoE annual budget shrinked to 1.5 billion Lebanese pounds and rumors for replacing the Ministry with a Higher Council for the Environment are raised. This was lately denied by the concerned authorities and the Ministry of Environment remained an independent ministry. The role of the Ministry is foreseen in the management of the coastal zone on a sectoral basis and in the awareness level.

2- *Ministry of Transport:* The Ministry was created by Law no.214 of year 1993. Even though 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 (Legislative Decree no. 214 of year 1993), the lack of instrumental and financial resources is considered as a burden towards enabling the Ministry to undertake its duties. Moreover, the Ministry of Transport is not well equipped in case of accidental spills. On the other hand, and according to Ministry sources, a national plan to combat marine pollution was prepared in 1996 with the National Marine Center, but this plan was never executed.

   As for railways, priority is accorded to execute two projects, a line that links Jounieh to Jiyeh, while the second links the North to Homs in Syria. These lines will serve for both goods and passenger transportation.

3- *Ministry of Hydraulic and Electrical Resources (MoHER):* The Ministry was created by law no.20/6 of year 1966 empowering it to resolve problems concerning water services and regulations. In 1994, a wastewater drainage department was established to study and execute wastewater works (Decree No. 5343). However, the role and responsibilities were not clear enough to empower this department. This led to confusion regarding the public institution responsible for the wastewater sector especially with the duties given to the Ministry of Environment and the Ministry of Public Health.

4- *Ministry of Public Health:* The Decree No. 8377 of year 1961 empowered the Ministry of Public Health to establish criteria and standards for drinking water and sewage systems and the installation of sewage networks. Here also duties evolving on environmental issues are subject to overlaps with the Ministry of Environment.

5- *The Ministry of Tourism*: The Ministry was created in 1966, Law no.21/66, and one year later a law no.58/67, year 1967, was promulgated to execute and operate touristic projects as well as the management of touristic sites. Within the Ministry, the Directorate of Touristic Equipment has the authority to formulate technical opinions regarding the submitted projects (e.g. hotels, restaurants, various leisure activities, etc.). The consent includes the architectural aspects, the conformity to the norms, but it doesn't extend to include environmental sides. The mission of the Directorate of exploitation is to ensure, directly or indirectly, the management and the supervision of tourist equipment dependant of the Ministry.

6- *Ministry of Public Works:* This Ministry was empowered through its two main directorates (Directorate General of Highways and Buildings, and the Directorate General of Urban Planning) to regulate and supervise construction work and urban planning. The Directorate of Roads within the Directorate General of Highways and Buildings is responsible for road maintenance. Over the war years, institutional capacity for administration of the road network was severely depleted. This loss of institutional capacity is best illustrated by the reduction in skilled manpower that the Ministry is suffering from currently. The Urban Planning Law, Decree no. 69 of year 1983 gives the Directorate General of Urban Planning powers to preserve lands for agricultural use, establish zones for industrial or commercial development and to

protect archaeological buildings or natural sites for aesthetic, historic or environmental reasons. The role of the Directorate General of Urban Planning is classical. Its role is to proceed in the elaboration of documents relevant to urban aspects. These documents are usually based on studies of demographic type, socio-economic, spatial (constraints, slopes, etc.) types.

Decree no. 16314 of year 1964 stipulated that the Municipal Projects Service should prepare studies related to municipal buildings, for example common sanitary installations, small slaughter houses and public gardens, and conduct studies for the rehabilitation of towns and villages, like wastewater and storm water collection and drainage, sewage network planning, solid waste collection and treatment.

7. *Ministry of Agriculture:* The Ministry was empowered to regulate and supervise duties related to the protection of agricultural wealth and soil preservation, control of hunting (in collaboration with the Ministry of Environment), 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.

Related to the Ministry of Agriculture is the Green Plan, which was established by the Decree no. 13335 of 1963, as an autonomous bureau dealing with agricultural expansion and development. The main duties of the Green Plan is to expand and develop agricultural areas to provide maximum land for productivity and agricultural production, by helping in the construction of water reservoirs and the promotion of modern irrigation systems, and by providing access farm roads and internal terrain roads. The Green Plan's financial assistance covers also complementary works such as trellesis for grapes, retaining walls, modern irrigation systems, seedlings and others. The technical assistance is provided in terms of survey planning and supervision of the work executed. Note that despite these functions, overlapping is very clear with those of the Ministry of Agriculture departments, and a high lack of civil servants working in the Plan is also observed.

8- *Ministry of Industry and Petroleum:* Created by law no. 9/73 of year 1973, the Ministry is in charge of managing problems regarding industries and classified establishments. However, the provisions provided by the organization decree does not include any duties for the Directorate General of Industry for the environment issues.

However, there is one provision concerning the Directorate General of Petroleum in Decree no. 7294 which enables the Directorate to fight environmental pollution caused by petrol and its derivatives.

9- *Ministry of Municipal and Rural Affairs:* Constituted by Law no. 197 of year 1993 as a split off from the Ministry of Interior (MoI). The duties of this Ministry are to oversee municipalities and to play the role of coordinator between them and the other ministries. Lately, the Ministry of Interior became again responsible for all aspects of municipal governance, by encompassing the Ministry of Municipal and Rural Affairs within its premises.

10- *Ministry of Displaced:* Created in 1992, the Ministry of Displaced was a governmental initiative towards social cohesion and reintegration. Its purpose is to grant and guarantee the protection of the resettlement of the displaced in their home towns. A Central Fund for the Displaced was established to fund and rehabilitate the local infrastructure networks of the areas of displacement. Priority was given to physical reconstruction (infrastructure or housing) in addition to the evacuation of illegally occupied buildings. The Ministry is implementing rehabilitation and capacity building projects in the CAMP area, namely in the framework of activities of the "Reintegration for the Socio-economic Rehabilitation of the Displaced" project.

11- *Other governmental bodies:*

The Council for Development and Reconstruction (CDR): Following the Taef Accord, the Government revived the Council for Development and Reconstruction (CDR) and entrusted it with the task of providing new infrastructure as well as rebuilding and upgrading the primary infrastructure neglected or damaged during the war years. The Legislative Decree no. 5 of January 3, 1977 stipulated that the Council for Development and Reconstruction shall have duties in planning, consulting and steering, executing, financing and controlling projects. Some of these duties are:

- To plan and suggest economic, financial and social policies.
- To propose to the Council of Ministers laws for reconstruction and development;

- To advise the Council of Ministers on models of execution, finance and control of the government approved programmes and projects;
- To ask various ministries, municipalities and other public institutions to prepare projects that suit public reconstruction and development goals;
- To provide the ministries, municipalities as well as public and private institutions with relevant required data.

The Mohafez (Governor) and Qaim Maqam (District Administrative Officer): The Biodiversity Country Report defined the role of the Mohafez (governor) as the supervisor for the application of laws, including granting industrial plant permits and fight against pollution of all kinds. Although Lebanon is subject to a centralized administration, the three ministries of Interior, Transport and agriculture are represented at the level of Mouhafazat and Qaim Maqam.

The Municipalities:

The Biodiversity Country Report described the local authority as including the President of the Municipality, the Mayor and the Rural Policemen. Municipal Councils are responsible for the delivery of a number of environmental services within their locations such as road planning, sewerage and solid waste collection and disposal. Even more importantly, municipalities are involved with pollution control. Their police forces and health officials being authorized, in their capacity as justice police to control violations of any nature whether related to public cleanliness, waste disposal or pollution caused by classified firms.

The Municipal Law no.118, year 1977, of the Ministry of Interior, attributes in theory wide powers to the municipality in domains relevant to management, urbanism, environment and other fields.

The Tourism Reconstruction and Development Plan outlined the main functions of the municipality:

- Cleanliness, hygiene and treatment: To manage and dispose of household solid waste; waste water collection; clean up and opening of streets, leaks, water networks and dumps; follow-up of public health issues such as vaccination, waste water control, control of gas emissions, etc.

- Elaboration of master plans, zoning, plans for the conservation of natural archaeological and touristic resources; land use plans; roads infrastructure, rural roads, public places, etc.; construction of buildings used for cultural, sanitary, and sport purposes, etc.
- Control the execution of urban and environmental protection: control, approval and follow-up of construction permits; monitor the application of laws and regulations; execution and maintenance of works relevant to equipment and infrastructure within the municipal domain: roads, signals, lightening, public gardens, etc.

The President of the Municipal Council and the Council are in charge of formulating an annual action programme, budgeting it and voting it to the majority.

The financial resources available at a Municipality are, knowing that in general the resources of the municipalities represent around 20% of their planned total budget.

- Resources coming from taxes (stamps, public advertising, amendments, building taxation, habitat taxation, etc).
- Taxes of autonomous offices (water, electricity, etc.), which are usually not channeled to the Municipality.
- Annual allowances from the Government proportional to the total municipal population and proposed projects. However these allowances are not always allocated to the municipalities.

It is worth highlighting the commencement and the evolution of the local governance in Lebanon. Eventually it started during the Ottoman period when a caza system and a village were initiated. During the French mandate, a new municipal law was promulgated which retained the framework of the Ottoman municipal law but with certain degree of centralization. Under this law, municipalities were governed by elected municipal councils whose heads, appointed by the Central Government, were also agents of the central government. After 1943, reforms were introduced for administrative decentralization to improve the ability of municipalities to deliver essential services and functions, which are important to local and regional development.

Since its independence in 1943, Lebanon had witnessed only two municipal elections until the recent elections that took place in June of 1998. The absence of the municipal authorities led to the lack of commitments of the local communities in managing their environment and the development of local potentials. Deterioration in the quality of life in certain regions was essentially due to inadequate municipal management. Before the recent elections, there were only some 107 municipalities who were active in Lebanon; and the lack of sustained integrated projects in rural areas kept the municipalities very poor. The major problems faced by most of the urban and rural municipalities were solid waste, sewerage, preserving cultural heritage, public health and urban planning. Municipalities in rural areas are also plagued with mal allocation of domestic and irrigation waters, as well as urban encroachment in their agricultural lands and forest areas.

1.6 Policy and legislative framework

1.6.1 Policy framework

As a result of the Taif Accord signed in 1989, Lebanon started a five years reconstruction and socio-economic rehabilitation programme, called National Emergency Recovery Program (NERP), that aimed at developing and restoring the basic infrastructure destroyed during seventeen years of war. Road networks, power generation, water, wastewater treatment, solid waste management, telecommunication, transportation, and education and health were all major rehabilitation components of the programme, which was followed by a ten-year programme called Horizon 2000.

The government allocation to the environmental sector represents only 0.3 percent of the total program expenditure, as the Environment Strategy Framework (1995) stated; this implies that only $US 3.5 million were dedicated to this sector out of a total budget amounting to $US 10 Million. The rehabilitation of basic infrastructure and the regaining the good image Lebanon used to have were the priority. In this context, the environment was not perceived as such, and projects were not based in their implementation on a clear national environmental policy guiding the country in a sustainable way.

In 1995, a team of World Bank consultants carried out the Environment Strategy Framework in order to set the basis for a better five-year planning and management on the national level that takes into consideration the environmental problems and their consequences on the national economy. In 1998, the same framework was updated and submitted to the Council of Ministers for approval, yet it is still tabled.

Since the new Cabinet of Ministers has been formed in November 1998, a low profile of green issues was noticed. Policies are not clearly formulated neither illustrated by any of the ministries concerned by development issues, most probably due to the fact that the Country is passing through a transitory phase between two governments. Meanwhile, the number of ministries was reduced to 16 only, the Ministry of Environment was not among abolished ministries; this was not the case of the Ministry of Municipalities and Rural Affairs which becomes a part of the Ministry of Interior.

With the complete absence of coherent policies adopted by the Government, extensive investigations on a number of on-going and planned projects, concerned directly or indirectly with coastal zone management, were conducted. Ministry representatives were met, and workshops were attended to analyze the evolution of national policies and government strategies.

In this regard, two workshops were organized lately with an emphasis on the impact of coastal zone management. The first workshop turned on solid waste management issues, in the framework of activities of the Solid Waste Environment Management Programme (SWEMP). It was organized jointly by the Ministry of Environment and METAP (on May 8 and 9 1999), aiming to present the results of studies evolving on domestic, industrial and hospital wastes on the national level; and to participate in putting short- and long-term policies to resolve the solid waste problems in Lebanon. A general rejection for sanitary landfills and incinerators was observed during the workshop, which was not attended by municipal authorities. The workshop recommendations are not finalized yet.

The second workshop was organized by Dar al-Handasah (a consultancy firm) on April 23, 1999 to evaluate the Marine Sand Project from an environmental perspective. The purpose of the workshop was to inform the main stakeholders about the environmental components of the study, and exchange the stakeholders' views and concerns regarding

possible impacts of the Project. Eight possible fields of impact were preliminary defined and discussed, such as the effects of sediment excavation from the sea-bed; effects of landing; sediment treatment impacts; and beach replenishment impacts. Here also, it was noticed the absence of directly concerned stakeholders (like municipalities, syndicate of fishermen, etc.). Finally, results of the project as well as potential locations for sand extraction are not identified yet.

1.6.2 Legislative Context

Lebanon is provided with a wide legislative portfolio, dated back mostly to the thirties. Outdate, lack of clarity and of enforcement and implementation tools are some of the characteristics of the Lebanese legislation. The coastal management does not make an exception to the rule. However, very few attempts were conducted in order to regulate the sustainable use of coastal resources.

The coastal zone is defined by the Law no. 144 of year 1925, which delimits the territorial sea at about 12 nautical miles away from the coastline. This law substitutes a statutory order promulgated in year 1921, linking the coastal area delineation to the fishing activity destination extending to 6 miles away from the coastline or the islands. Other major existing coastal-related laws are promulgated within the jurisdiction of the Ministry of Public Works, namely Law no. 4809 of year 1966, which regulates the Lebanese seashores. The same law deals with regrouping of lands, construction systems and authorized investment activities. Town planning, master plans, and implementation rules and regulations are presented within the decree-law no. 69 of year 1983. Finally, many laws regulated public properties. Decree no. 320 of year 1990 stated that all water sources (including lakes, springs, rivers, underground waters, riverbanks, etc.) as public property. Despite of these laws, privatization of the shore and the increasing number of marinas and breakwaters hinder the public access. A complete list of related coastal laws and decrees are presented in Annex 1.

On the other hand, the Ministry of Environment proposed coastal zone laws with the assistance of UNDP and World Bank experts. In 1996, an outline for a draft coastal management law was prepared by UNDP, with the objectives to protect, conserve,

develop, and where possible, restore or enhance coastal resources of Lebanon, facilitate public awareness, develop and apply environmental impact assessments and prepare a coastal strategy. This draft law was intended to facilitate the establishment of a Coastal Management Council, which members include representatives of concerned ministries, local authorities and communities. A coastal management unit shall be established under the auspices of the Ministry of Transport. However, this law was not developed further.

During the first phase of Capacity 21 Programme, a Code for Environment was prepared to regulate environmental issues on national and regional level. However, this was not formulated in a global way, and follow-up was not ensured. In 1997, the Code was revived by the former Minister of Environment and re-formulated by World Bank experts to be presented to the Parliament for adoption in January 1998. The Code includes three major components with respect to the coastal area; The first component outlines major basic concepts about pollution prevention and control, polluter-pays, biodiversity conservation, combating natural resources degradation, cooperation and monitoring. The second component stresses on the application of environmental impact assessment, and the third is the formulation of a complete chapter on the protection of the coast and the marine area from land- and sea-based sources. Most of all, the Code has put the basis for the establishment of the Higher Council for the Environment.

Also, a decree to regulate the Environmental Impact Assessment was prepared in 1998 by the Ministry of Environment, but it is still not finalized. Unlike the policy framework, many studies and plans were conducted with a direct or indirect impact on coastal resources issues.

International environmental agreements

Lebanon is a contracting party to:

- Barcelona Convention and its protocols (1975);
- The Ramsar Convention on Wetlands of International Importance Especially Waterfowl Habitat (1998);
- The Paris Convention concerning the Protection of the World Cultural and Natural Heritage (1972);
- United Nations Framework on Biological Diversity (1992);

- The United Nations Convention on Climate Change (1994);
- Montreal Protocol on Ozone Depleting Substances (1992);
- The United Nations Convention on the Law of the Sea (1982);
- The MARPOL Convention

1.7 Environmental awareness initiatives

As mentioned earlier, the war has been the cause of huge brain drainage. However, the basic educational level in Lebanon (especially in the coastal area) is considered good. This is due to the presence of public and private schools in most of the villages. However, the environmental awareness is not sufficient among the level of educated people. A study made by the Ministry of Environment on a number of educated people and on people involved in the environmental activities, showed a great distance between the education and the environmental awareness. This was noticed on the level of the application of the environmental disciplines. In addition, the study showed the lack of links between the environment and the development in the perception of this group of people.

1.7.1 The governmental level:

The Ministry of Environment has started to operate in 1994. Within its planning and management tasks, the Ministry has worked on establishing environmental policies. The main environmental measures taken by the government are the banning of hunting, supporting the introduction of unleaded fuel, and establishing natural reserves. In all these issues, NGOs played a leading role.

Among its achievements, the Ministry of Environment made several audiovisual spots to tigger the attention and awareness of the public audience on the different issues of environment related to the sorting of waste, use of energy etc.. In addition, the Ministry has participated in the organization of educational campaigns. The latest campaign was the ozone day, for the sensitizing swimmers to adopt measures of sun protection.

The Capacity 21 programme, a UNDP project executed at the Ministry of Environment, prepared an environmental awareness strategy and plan. A national conference will be held on this issue after the approval of the Council of Ministers. Also, the same programme established direct contacts with NGOs representatives for assistance and

support. In that regard, a small funding project has been assigned for NGOs dealing with public awareness as a priority. Added to this, MoE team and Capacity 21 programme concerned staff conducted visits to schools for raising the awareness of students. Until now more than hundreds of schools have been visited all over Lebanon. Moreover, an implementation of certain activities as the forestation and waste sorting is applied during the summer camps.

According to the persons involved in the environmental awareness in the MoE, the level of public awareness has been progressing during the last years. However, people in charge have mentioned some deficiencies in the system, as the absence of permanent advisors who can respond to the demand of rural areas for special assistance or providing local seminars. In addition, the lack of coordination and collaboration between the Ministries in charge of awareness and education constitute an important constraint for the development of common projects, especially related to the public awareness.

Finally, it is worth mentioning that a protocol was signed with the Ministry of Education for introducing the issue of environment in the schools program. Also, the Ministry of Education has agreed, together with WHO to develop health and environment school clubs. The Terms of Reference for this project are prepared and are waiting for approval.

1.7.2 The Municipal Level:

The latest elections of municipal councils have been characterized mainly by a new blood of young and educated people. Furthermore, the work plan of most of the formed municipal councils included environmental activities. Few of these plans covered the subject of sustainable development and environment.

Soon after the elections, most of the municipalities have launched clean-up campaigns. They have also looked for solutions for the problem of solid wastes and sought the help of the Ministry of Environment for assistance. In this context, it is worth highlighting a pilot initiative that is currently carried out within the framework of the Capacity 21 programme, in order to develop and assist the municipalities in formulating an environmental action plan through Local Agenda 21 (LA21). Four municipalities distributed geographically in three Caza's were selected for this purpose. These

municipalities are Aley, Borj El-Barjneh, Jal El-Dib and a conglomeration of 24 municipalities in the western region of the Bekaa Valley). The municipalities of Jal El-Dib and Bourj El-Barjneh are located on the coast. However, they are not within CAMP area.

The work plan made to the chosen municipalities includes the establishment of environmental action plans defining specific actions, policies and economic measures for sustainable development according to the priorities set by the municipality itself.
According to the latest report of the LA21, the progress is significant in the chosen municipalities. Three of the municipalities have now established their own Local Agenda 21 Committee. In addition, they have drafted a guiding community Vision Statement. They are currently working on the identification and prioritization of the list of activities. The municipality of Aley has even completed this phase and has established sub-committees linked with different sectors such as tourism, education, environment, etc.

It is also to mention that the Capacity 21 Programme held a Local Agenda 21 evaluation session held on July 29, 1999 at the Ministry of Environment. Head of concerned municipalities, the Ministry of Environment and various stakeholders attended the session, during which, the following list of obstacles was enumerated as faced by the working team:

- The local agenda 21 was being done in regions, which had previously not witnessed municipal elections for a period of 30 years.
- There were numerous environmental problems pressuring municipalities.
- The municipalities expected fast results.
- The municipalities' expectations out-weighed the project's capacities.
- The municipalities lacked governmental guidance.
- It was the first time that a Local Agenda was being introduced.
- Training activities were not strongly desired.
- There was a lack of coordination between different projects being carried out in one region and having a common purpose.
- Municipalities were reluctant in letting third parties participate in the decision-making process.
- One local agenda expert was nor enough for the Bekaa area.

- It was difficult to clarify that Capacity 21 Programme was not a funding agency or an instrument of implementation.

1.7.3 The Local Associations:

The activities of the local associations and NGOs have started from the 1980. They have played a major role in raising the public awareness in the country. Moreover they were involved in many social, human and economic issues during the war when it was noted the effective absence of the Government.

A remarkable increase in the number of NGOs has been noticed during the recent years. Most of these NGOs are scattered in Beirut area and its surroundings. The official number of NGOs is 94 associations (according to the Ministry of Environment sources), only 11 of them are located in the CAMP area. However, the activities carried out by all of these organizations are mainly on the local level, and very few are well specialized in domains to refer to. Despite of this, many manifestations were organized against promulgating certain laws and governmental decisions and NGOs fought aggressively for the protection of the coastline, stopping the dumping of toxic wastes, hunting regulation, etc.

Nevertheless, one should not ignore the performance of some NGOs working at regional or national level. It was noticed, through the interviews with the NGO representatives in CAMP area (e.g. those located in the area of Nabatieh) that their activities were mainly concerned with public awareness at schools, within the prospects of environmental protection, reforestation and waste management. The region of Saida has a union of 37 NGOs working together on environmental projects as the waste sorting. In Sour, the association of Amwaj El-Biaa had a leading role in establishing Sour beach reserve.

Some other NGOs located in Beirut are spreading their activities to most of the Lebanese regions, such as the Green Line and the Environment Information Center (EIC). On the education and environmental awareness level, the EIC has been performing a program of training for the trainees in five schools located within CAMP areas, namely the Displaced area. The training for the teachers included waste collection and sorting, as well as reforestation techniques.

The Green Line is also performing a five-year educational program that is taking place in 70 schools in Lebanon. The Green Line trainers are giving assistance and monitoring for the cultivation of forest trees, vegetables, fruit trees, composting, honey production, poultry and silk production. In the context of the integrated pest management, Green Line is providing training at all levels (farmers, engineers, and enterprises) to perform organic farming.

In the Mount Lebanon area, The Association for Forest Development and Conservation established a Mediterranean Forest Development and Conservation Center (MFDCL) with the objectives to provide national and international NGOs with the necessary facilities to carry out trainings and seminars. The Association also provides technical support in forest fire fighting and reforestation techniques.

1.8 Local Expertise:

According to the "Regional Environmental Assessment Report on the Coastal Zone of Lebanon", most national institutes are understaffed and poorly equipped. Therefore, the government often relies on private consulting firms.

Moreover on the national level, the overlapping of institutional responsibilities for environmental management is contributing to a poor implementation of relevant projects. This overlapping of key national, regional and local agencies is present in the areas of water resources and sanitation, industrial pollution, solid and hazardous waste, agriculture and forest, and cultural heritage. However, the specialized experts in these fields are sometimes missing in the national institutions. This is due to the low salaries paid by the government, which brings the professional experts to work more in the private sector or outside Lebanon. In addition, the procedure of hiring new people with specific expertise is complicated, since it is not done directly by the Ministries. In addition, the average age most of the civil servants is becoming high.

The private sector possesses a good number of specialized people. However, the highest percentage of specialists is more in the field of engineering (civil, architecture etc.) or in the general sciences like biology, chemistry and physics. A gap or weakness is noticed in some expertise, the number of people with other specializations, being hardly existent or

badly required. For example, specialties like marine biodiversity or environmental economy are absent.

On the other hand, and even though the level of available specialists is considered good, they are underpaid. This situation is very frequent especially in the case of international contracts, whereby the wages of the local experts are much lower than those of the international experts. In addition, the field of research in Lebanon is weak due to the economic situation and the absence of funds dedicated for this purpose.

1.9 Major environmental references

The State of the Environment Report (1995) funded by the World Bank and executed by MoE with a fund of $US 400,000 was the first report to provide a comprehensive overview on the environmental situation especially after the war period.

But no doubt that the "Regional Environmental Assessment Report of the Coastal Zone in Lebanon" (1996) -prepared by ECODIT-IAURIF- is found to be the most comprehensive and global report that has been done on a national level. Funded by the World Bank and executed by the CDR with a budget of $US 400000, the report provides a global database of the coastal area. It comprises coastal zone development scenarios for the year 2015 with an identification of key environmental protection scenarios.

Another important reference is the biodiversity Country Study funded by UNDP/GEF and executed by the Ministry of Agriculture with a budget of $US 300,000. The study which is available on Internet site is composed of nine volumes entailing lists of species; terrestrial, coastal and marine, and aquatic fauna and flora; socio-economic factors affecting biodiversity; agricultural and livestock habitats and nature reserves; and a national current capacity and economic evaluation.

The Master Plan for Tourism and Reconstruction, launched by the Ministry of Tourism and approved by the Council of Ministers, was co-financed by the Lebanese Government, UNDP and the French Government (in 1996). After presenting a complete analysis of the current tourism situation, the plan suggested long-term strategic orientations as well as

short-term action programmes to be executed during the three coming years. Also, the plan included sections on how to manage the coastal cities to promote sustainable tourism (See Appendix C).

1.10 Inventory of past, on-going and planned projects and programmes

After the post war period, many projects executed in various institutions and supported by different donor agencies dealing with environmental issues were or are under way to be implemented. Increased concern about coastal area issues and other forms of conservation are obvious in many ministries and programmes. However, coordination is lacking the formulation of these programmes, which sometimes evolve on the same objectives and activities.

1. Integrated Coastal Zone Management Programme (ICZM): Funded by the World Bank and executed by CDR, this project consists of four main sub-programmes:
    - National, regional and local level ICZM programme, strategy, plan and coastal investment strategy and programme. This includes the purchase and installment of GIS equipment (hardware and software) for CDR, Directorate General of Urban Planning, Ministry of Rural and Municipal Affairs and the Ministry of Environment.
    - Legal, regulatory and institutional capacity strengthening.
    - Training on advanced ICZM planning and management and environmental impact assessment techniques related to coastal zone.
    - Detailed studies on two hotspots: Tyre in the South and Batroun-Enfeh to the North of Beirut.

The project which amounts to $US 5 million, is still frozen.

2. Integrated Coastal Zone Management between Jbeil (Lebanon) and Latakia (Syria): Planned to be jointly executed by Syria and Lebanon represented by their respective Ministries of Environment, the project aims at providing an infrastructure for an integrated management plan on the northern coastal strip by protecting, managing and developing sustainable coastal resources and areas through the following:

- The examination of existing information and evaluation of environmental and socio-economic characteristics of the concerned area.
- The creation of a territorial management plan through a Geographic Information System to delineate and identify sensitive spots.
- Launching pilot projects based on a community participatory approach that would eventually lead to an increase in awareness related to coastal environmental problems.
- Developing a coastal management center that would sustain development potentials in the region.

The project that was submitted to SMAP Programme late June 1998 is currently operational. An Italian Consultancy firm will implement this project jointly with an Lebanese firm "Envirotech".

3. The "Conservation of Wetlands and Coastal Ecosystems in the Mediterranean Region" Project: Funded by the UNDP/FFEM and executed by the Ministry of Environment, this project is concerned by two designated areas: Tyre Beach (in the South) and Ammiq Swamp (in the Bekaa Valley). It is designed to provide the legal and regulatory conditions, the institutional conditions and the tools required for the conservation of biodiversity under threat in the wetlands and coastal areas of the Mediterranean Basin, at the national and regional level. After assessing the threats and the constraints on biodiversity, the project will identify and apply the innovative tools required for integrated management, particularly the use of land policies for wetland management. This will promote the development of management systems and building capacities, and will focus on raising awareness, information and participation of the various stakeholders especially at the local level, whose involvement in the project will create the conditions required for its success and replicability all over Lebanon. The project will be executed in close coordination and collaboration with the GEF Protected Areas Programme. Its total budget amounts to $US 650,000. According to the regional coordinator, the project will not start before end of March 2000.

4. Darwin project in "Coastal Vegetation Survey and Management for Lebanon": This Project falls within the framework of the British Government's Darwin Initiative

designed to support the implementation of the International Convention on Biological Diversity. This three year project will be executed by the American University of Beirut, and will aim at preparing surveys of plant habitats in coastal areas, identifying plant species at risk and developing important areas for plant conservation. Also, the project includes a clause to assist the American University of Beirut with training designed to build the lasting capacity of the AUB as a center of biodiversity expertise in the region supporting other Lebanese universities in developing teaching materials and courses. The total budget of the project is estimated to be $US 200,000. The project has started in March 1999.

5. Post-Conflict Programme for Economical and Social Rehabilitation in South Lebanon: Convinced that the social support and the answer to emergencies should articulate a development strategy on the long term, the government of Lebanon decided at the end of 1997 to launch preparatory works for the implementation of regional programmes dealing with economic and social development of South Lebanon. For that purpose, the Lebanese Government asked the United Nations High Committee Relief (an interministerial organism) in collaboration with UNDP Programme to guide these works. The Programme was co-financed by the Lebanese Government (19%), UNDP (38%), Netherlands (31%), Arab Gulf Funds (8%) and Ireland (4%).

   The technical assistance project, which is a preparatory phase to the development programme included two components:

   - An experimentation of micro-projects (economic and social), in partnership with NGOs, cooperatives, local associations and municipalities was realized between November 1997 and September 1998.
   - The formulation of a regional development programme in South Lebanon was launched in August 1998.

   The main objectives of the first component are to:

   - Support financially a set of development initiatives, economic and social, having as a target the most deprived social categories or those who suffered from war sequences.
   - Evaluate the capacities of NGOs, to formulate and execute coherent developmental projects.

- Demonstrate the capacity of the Government to conduct development projects in partnership with the local community.

The main objectives of second component are to:

- Formulate a coherent vision and an integrated development strategy for South Lebanon.
- Orient and rationalize the Lebanese Government's efforts in order to make financial steps efficient within this area, while completed by donor agencies and private sector.
- Present a positive image of the future of South Lebanon.

6. The Lebanese Environment Development Observatory (LEDO): Prepared by UNEP-MAP and its Blue Plan Center and financed by EC- LIFE, the project is currently operational at the Ministry of Environment. It aims at filling the gaps in key environmental data, such as air and water pollution levels and industrial wastewater, and calculating the cost of environmental degradation. LEDO will act as a catalyst for the collection of data, and work with other ministries, agencies and academic institutions to agree on a limited number of environmental and development indicators of relevant importance to the sea and rivers in Lebanon. The project was approved and the funds amounting to $US 380,000 are channeled to the Ministry of Environment (approved by the Council of Ministers).

7. The National Action Programme to Combat Desertification: A UNDP Project, its main objective is to assist the Government to prepare and implement a National Action Programme within the framework of the UN Convention to combat desertification. This Programme will define the actual state of desertification and land degradation, the reasons for this degradation, the strategy to be adopted and the priority actions to be undertaken at all the possible levels of intervention. It will also identify and implement all the preparatory activities such as social and scientific surveys, necessary consultations, organization of national forums and activities aiming at information, education and sensitization of the public. The project budget is not finalized yet; it is still pending, waiting for the definition of the Ministry of Agriculture contribution.

8. The Agriculture Infrastructure Development Project: Funded by the World Bank, and executed by the Green Plan (GP), the project has as a main objective to create within the Green Plan the institutional capability to improve the decision-making process by undertaking environmental reviews of the proposed development activities before they are approved for funding. The role of the Environmental Information and Monitoring Committee within the Green Plan is to assess the impact of GP's core activities on critical ecosystems and the natural resource base, and to design and implement measures to mitigate any adverse effects on the environment. The project is almost operational since the end of year 1999.

9- Lebanon Greater Beirut Water Supply and Sanitation: Executed by the Council for Development and Reconstruction, the project aimed at providing drinking water supplies to Beirut, irrigation of coastal areas and the generation of hydroelectric power stations. The project objectives are to improve water supply and distribution capacity within Greater Beirut. The cost of the project is about 115 million dollars. The Project mitigation measures would include the preparation of a plan to address industrial effluent discharges and the implementation of the environmental monitoring plan along the coastal area, in particular in the vicinity of the sea out-falls discharges.

10- Beirut Urban Transport Project: Executed also by CDR, the project objective is to enhance the economic productivity of Greater Beirut Area by improving the operational and economic efficiency of its urban transport system. The project total budget is $110 million, and it was launched in February 1998.

11- Awali-Beirut Water Conveyor Project: The Ministry of Hydraulic and Electrical Resources (MoHER) in conjunction with CDR are undertaking networks rehabilitation and improvement of water supply in Greater Beirut and suburbs, which suffer from a severe shortage of water. The project consists of filling in the Beirut water shortage by channeling the Awali River located to the proximity of Saida. The Awali-Beirut water conveyor consists of :

- a raw water tunnel (length 4.2 km) from an extraction point at the tunnel to the Joun power station to the El Ouardaniya water treatment works;
- a tunnel for treated water (length 19.7 km) from the treatment works to Khaldeh located in the south of Beirut;

- transmission main lines (lengths 15 km) from the tunnel outlet at Khaldeh to a distribution chamber and further to storage tank at Hadath; and
- a transmission main line (length 4 km) linking to storage tank at Hazmieh to connect to an existing transmission/distribution water supply system. The works are designed for an initial capacity of $3m^3/s$, but the tunnels for which size is decided by methodology of construction will have a carrying capacity of about $9m^3/s$.

The construction period for the project is estimated to be 3 years. The cost of the project is estimated to be about $220 million.

12- Solid Waste and Environment Management Project: Project previously implemented at the Ministry of Municipal and Rural Affairs (currently postponed), the project comprised:

- the provision of technical assistance to the Ministry of Environment and to the municipalities to enable them improving their resource bases, developing their environmental management capabilities, and enforcing pollution prevention measures;
- provision of refuse collection and disposal equipment, including the development of sanitary landfills, compost plants and incinerators;
- development of coastal zone management plan and implementation of pollution prevention measures;
- Introduction of measures to increase the involvement of the private sector in waste management projects.

13-Coastal Pollution Control and Water Supply Project: The project evolves on the extension and rehabilitation of water supply facilities in Kesrouan and Nabatyeh, and wastewater collection and disposal systems in Kesrouan, Saida, Sour and Nabatyeh sub-project areas.

The objectives of the project are to:

- improve sanitary and environmental conditions in three major urban areas of the coastal zone, covering a population of about 0.7 million;
- extend water supply and wastewater services in the selected areas;

- reduce ground water and surface water pollution;
- reduce sea pollution to restore beaches for recreational use.

Proposed mitigation measures addressed the impact of project design, short-term impact during construction and long-term impact during operations, among other factors.

14- First Municipal Development Project: The project objectives are:

- to provide community driven municipal infrastructure, particularly targeting poor communities;
- to help the government developing a longer-term municipal development strategy;
- To assist the Ministry of Municipal and Rural Affairs developing institutional capacity, supporting municipalities in the planning and implementation of municipal infrastructure programs and services in an environmentally and financially sustainable manner, and developing policy options and strategies for municipal sector development and reform.

The total project cost is $90 million.

15- National Roads Project: Implemented by the Ministry of Public Works, the project was launched in 1996. Its has as objectives to preserve the national roads networks by reducing the backlog in road rehabilitation, and to maintain periodically and strengthen institutional capacity for maintenance and development of the national road network.

In terms of conservation, capacity building and awareness, other programmes and policies are formulated with a significant impact on the formulation of the project:

16- The Capacity 21 Programme: The Programme started its second phase in 1997 with objectives to provide capacity building to public and private sector as well as NGOs. A national awareness strategy is currently under preparation. A pilot initiative consisting of the implementation of Local Agendas in four municipalities (two of them are located on the coastal area) is also taking place. The project is currently phased out.

17- National Biodiversity Strategy and Action Plan: Lebanon signed the Convention on Biological Diversity in 1992 and ratified it in 1994. In 1998, and as a result to this Convention, the "National Biodiversity Strategy and Action Plan" project, a UNDP project implemented at the Ministry of Environment, elaborated a national biodiversity strategy and action plan. This strategy included a chapter on marine biodiversity with a goal to protect Lebanon's coastal and marine biodiversity and develop their resources in a sustainable way by creating partnerships with the stakeholders, in particular with the local communities. It defined an action agenda with short, medium and long term activities. However, implementation is not put into action yet.

In 1998, MedCities carried out a study financed by METAP and the Caisse des Dépots et Consignation, regarding the "Cost Recovery, Public/Private Partnerships and Financing of Local Actions". The objective of this study which was applied in Tripoli (Lebanon) among other cities, was to assist the towns of MedCities network in seeking new possibilities of financing local public services and amenities, and identify new funding possibilities particularly in terms of public-private partnership.

Finally, few field missions were conducted within the coastal zone management context. In May 1997, the Government of Finland conducted a fact-finding mission as a part of its development cooperation priorities. This aimed at gathering information for and assessing the feasibility of coastal and marine management cooperation in the Mediterranean region, namely in Tunisia, Egypt, Lebanon and Syria, based on the use and transfer of Finnish know-how in current modeling and water quality analysis. In this context, a project on the "Protection of Coastal Marine Environment of Southern Mediterranean Sea" (known as Land-3 project) was implemented by the World Laboratory, an International non-profit organization based in Switzerland. The activities of this project focused on the Lebanese Coast between Beirut and Aamchit where measurements and modeling the spreading and effects of waste in coastal zone were conducted. The assessment was expected to lead to setting a coastal and marine resources management project in cooperation with the countries and financing bodies. It is to note that the level of intervention of these projects in the area selected to implement CAMP is very limited or absent. Moreover, the sustainability of these projects has not been secured. MAP has to be sustained by implementing this project.

Projects in Lebanon

Name of the Project	Funding sources	Executed Agency	Total Budget	Scope of implementation	Status
Integrated Coastal Zone of Lebanon (ICZM)	World Bank	CDR	$5 M	National level	Not operational
Integrated Coastal Zone Management between Jbeil (Lebanon) and Latakia (Syria)	SMAP	MoE (Syria) MoE (Lebanon)	NA	Regional level	Operational
Conservation of wetlands and coastal ecosystems in the Mediterranean Region	FFEM	MoE	$650.000	Sour, Aammiq	Expected start Apr. 2000
Coastal vegetation survey and management of Lebanon	British Government	AUB	$200.000	Enfeh (North of Lebanon)	Operational
Post Conflict Programme for Economical and Social Rehabilitation in South Lebanon	GoL, UNDP, Netherlands, Arab Gulf Fund, Ireland	United Nations High Committee Relief	NA	Sour (Tyre)	Launching Phase II
Lebanese Environment Development Observatory (LEDO)	EC-LIFE, MoE	MoE	$380.000	National	Operational
National Action Programme to combat Desertification	UNDP, MoA	MoA	NA	National	Still under finalization

Name of the Project	Funding sources	National Executed	Total Budget	Scope of implementation	Status
Agriculture Infrastructure Development Project	World Bank	Green Plan	NA	National	Operational
Lebanon Greater Beirut water supply and sanitation	World Bank	CDR	$5M	Greater Beirut	Operational
Beirut Urban Transport Project	World Bank	CDR	$110M	Greater Beirut	Operational
Awali-Beirut water conveyor Project	World Bank	CDR	$220M	National	Operational
Solid Waste Environment Management Programme	World Bank	CDR	NA	National	Postponed
Coastal Pollution Control and Water Supply Project	World Bank	CDR	NA	National	Not operational
First Municipal Development Project	World Bank	CDR	$80M	National	Not operational
National Roads Project	World Bank	CDR	$64M	National	Operational
Capacity 21 Programme	UNDP, MoE	MoE	$750.000	National	Phased out
National Biodiversity Strategy and Action Plan	UNDP, MoE	MoE		National	Phased out
Protected Areas Project	UNDP, MoE	MoE	$2.5M	Barouk Cedars, Horsh Ehden and Palm Islands (Tripoli)	Operational
Ozone Office	UNDP	MoE		National	Operational
LIFE	UNDP	UNDP		National	Operational
Unit of Planning and Programming (UPP)	METAP, MoE	MoE		National	Operational
Industrial Compliance	EC-LIFE	MoE		National	Operational February 2000

Conclusion

The current situation of the coastal zone in general could be summarized as follows:

- Lack of an integrated coastal zone legislative framework;
- Absence of an integrated coastal management master plan;
- Lack of a main governmental reference for coastal zone issues;
- Government agencies in need of technical assistance and capacity building;
- Uncertainty in implementing many projects that are of direct relevance to the coastal management issues;
- Projects, if implemented, are mainly adopting a "top-bottom" approach;
- The environment is not being on the top priority of national issues;
- Local Agenda's experience in four municipalities is a first initiative in that regard ;
- The tourism activities oriented towards attracting the international tourist, rather than the local tourist;
- Lack of an agricultural policy;
- Lack of Little information available on the coastal vegetation.

Taking into account these facts, and the possible geopolitical evolution that might take place in the region, CAMP-Lebanon initiative is considered of high relevance especially when implemented in the area located to the South of Beirut.

Sensitive Areas and Hot Spots

Sensitive Area/ Hot Spot	Status	Rationale
Akkar beach and dunes	B	Beach degradation and erosion
Akkar agricultural plain	A	Potential loss of agricultural area due to urbanization and free trade zone
Coastal stretch from Beddawi to El-Mina Port	C	Site of future wastewater plant. Possible site of future solid waste landfill on land reclaimed from the sea. Calls for reclassifying coastal tourism zone as an industrial zone
Palm Islands	A	Legally-protected nature reserve in need of an effective management plan and park service[1]
Ras en Natour and Enfe	B	Characteristic landscape (salinas, historic port) threatened by mass-scale tourism development
Ras ech Chaquaa, w/ Chekka and Selaata industries (from Chekka to Batroun)	A	Outstanding natural beauty and biotope of rich biodiversity, threatened by industrial growth and quarries (Chekka and Selaata). De-classified stretch of coast (previously industrial) offers opportunity for sound management.
Nahr el-Jawz Valley and Msaylha fortress	A/B	Cultural, archaeological and natural landscape requiring protection. Visual impacts of illegal quarry behind Msaylha fortress.
Batroun marine reserve	B	Declared reserve ill-defined with no management or conservation plan
Aamchit-Jbeil Coastal area	A	Tourism development pressures could hinder public access to the beach and spoil landscape. Rocky mountain (w/ garrigues) and green area could serve as urbanization buffer zone
Nahr Ibrahim Valley	B	Unique ecology and legendary landscape threatened by industry and urbanization
Jounieh and mountain	C	Characteristic landscape and quality of life degraded by uncontrolled urban growth
Nahr el-Kalb Valley and river mouth	B	Geology, paleontology, biodiversity, and history of this unique site threatened by infrastructure (highway and power plants) and rampant urbanization. Jeita spring source threatened by increased pollution
LINORD and Metn Nord	C	Beaches either lost forever or privatized. Opportunity for planned urban development of reclaimed land. High environmental impacts of supplying required aggregate and sand.
Beirut, w/ Grotte aux Pigeons	C	Several hotspots (port, Normandy landfill) and sensitive areas (zones 9 and 10, Grotte aux Pigeons
Airport and ELISSAR	C	Beaches either lost forever (if land reclamation options selected) or privatized. Delicate relocation of industries and people.

[1] Currently under execution within the Protected Areas UNDP Project.

Sensitive Area/ Hot Spot	Status	Rationale
Damour plain	B	Agricultural plain/ green space threatened by tourism development pressures.
Nahr Hammam Valley	A	Pristine valley with interesting ecological habitat needing legal protection
Saida coastal area	C	Northern beaches threatened by urbanization and tourism development pressures. Coastal highway project would separate old city from fishing port and Sea Castle. Environmental and socio-economic impacts of SIDON port.
Rmeileh beach	A	Sandy coast to be protected
Zahrani area	C	Old refinery site and industrial area requiring rehabilitation
Litani sea shore and valley and Kasmieh plain	A	Ecological and economic importance of river need special protection. Sandy coast and scenic valley to be protected. Agricultural plain threatened by ribbon urbanization along new highway.
Mhaylib coastal area	B	Public-owned "beach reserve", currently partially occupied by illegal housing
Tyre, to Rashidieh camp south	B	Unique historic/ cultural sites. Access to the sandy beach north and south beach threatened by tourism development projects[2]
Iskandarouna beach	A	Sandy coast to be protected
Ras en-Naqoura	A	Distinctive landscape and ecological importance threatened by rushed development in the event of regional peace. Opportunity to reroute inland the southern stretch of coastal expressway before expropriation and building activities begin.

A Preserved but threatened areas requiring protection
B Areas currently being degraded requiring protection
C Degraded areas requiring rehabilitation

Source: Regional Environmental Assessment Report on the Coastal Zone of Lebanon- CDR-1997.

[2] Tyre beach is now a reserve declared by-law

Chapter Two
Coastal Area Management Programme- Lebanon

Introduction

Based on the studies that were covered by other projects, the discussions held with the various stakeholders, and most of all, taking into consideration the evolution of the geopolitical situation that is currently occurring in the region, it appears of primary importance to orient and establish a sustainable management programme within the area that is located to the South of Beirut. The selected area doesn't appear for the first glance as of urgent need compared to other areas along the coast, However, an intervention at this moment would have a great benefit, especially when numerous environmental problems are increasingly pressurizing the municipalities that are seeking all available human, financial and technical resources.

2.1 Definition of CAMP area

As previously mentioned, the study area of this report is based on the coastal zone definition adopted by the "Regional Environmental Assessment Report on the Coastal Zone of Lebanon (REA)". This report adopted an 8-km onshore strip, while noting that different disciplines might deviate from this strip. Two good examples are certain types of fauna and flora which might only exist up to altitudes of 300 m, which in the Northern end of the study area is within 2 km from the shore, whereas at the level of Sour it reached just beyond the 8 km mark. As for sewage, there are areas both in the Northern and Southern part that are beyond the 8 km strip that are planned to be connected to collection and disposal systems that will be within the study area.

At the Northern edge, the study area was cut at the boundary between the Aley Caza and Baabda. This was justified by the fact that Khaldeh is still within the strip, as well as the important industrial zones of Choueifat. Furthermore, the airport, and more crucially, the Southern suburbs of Beirut were kept out of the study area, given that their dynamics are very much linked to the capital. At the Southern edge, an 8 km radius was drawn from the

city of Sour, which ensured that enough of the Southern hinterland of Sour was included. See Appendix B- Map 2.1.

As such, the study area occupies around 615 km2, or almost 6 percent of the total Lebanese territories. However as a coastline, the study area stretches 85 km, or 33 percent of the total 210 kms; considering the fact that most of Lebanon's inhabitants are found in coastal settlements, which shows that the study area contains a significant proportion of the inhabitants, and consequently its economic, social, educational, and other sectoral activities. There are essentially four Caza's that are intersected by the study area: Aley, Chouf, Saida, and Sour. Along the Eastern edge, there are very small portions of Jezzine and Nabatiye, together accounting for 29 km^2 or less than 5 percent of the study area. Focusing on the four main Cazas, all except Saida have roughly a third of their total area in the study area, while for Saida this figure is 86 percent.

2.*2* *Geographic context*

2.2.1 Topography

As could be interpreted, the study area is very steep at the Northern end, while around the area of Sour it can be considered a plain. More specifically, the highest point is 980 meters, leading to an average slope of 12 percent. This point is situated near the village of Ainab. Further to the North, the area peaks at 650 meters, or an average slope of 8 percent. The high point of Ainab continues South for another 4km until the level of the coastal village of Naameh. Immediately the elevations drop, as the valley of the Damour river start to take shape, with a maximum elevation at the Eastern edge of the study area reaching 200 m. Moving South, the Eastern edge rises again to between 500 to 600 meters, and once past the promontory of Sa'adiyat, the edge reaches 780 meters, after which it drops until reaching 150 meters in the valley of the Awali river just before the city of Saida. Further South, a low hill reaches 350 meters before the Eastern edge drops again in the valley of the Sainik river at the level of the heavily industrialized town of Ghaziyeh. Moving South, the coastal plains dominate, with another cut where the Zahrani river flows down to its outlet at the village of Zahrani, the location of one of the two fuel based power generation plants in the study area. At the level of Sour, the average slope drops to 3 percent. Map 2.2 in Appendix B shows the simplified contour map (contour

lines only at every 50 m), while Map 2.3 in Appendix B shows the slopes (in 10 percent intervals) for the CAMP area.

2.2.2 Bathymetry

The coastal waters are relatively shallow along the CAMP study area, although there are significant variations. Looking at the 0-20 meter band, it is generally two kilometers wide from Khaldeh down to Saida except at the points of Saadiyat, Nabi Younes, and Rmaileh where it narrows to half a kilometer. Further South from Ain Al Zayn to Sarafand, the band varies between four to five kilometers, and then narrows again to between two to three kilometers until Sour and beyond. Generally speaking, the slope starts to increase after the 20 meter contour. The 20-100 meter band from Khalde to Ain Al Zarqa is between 2 to 4 kilometers wide, except at Rmaile where it is the narrowest at half a kilometer followed by Saida at 1.5 km. Moving further to the South, the band widens to between 5 to 8 kilometers.

2.2.3 Climate

Most of the study area falls in the area of Lebanon that typically receives the least rainfall. Generally speaking, Lebanon's climate has dry summers and wet winters, with seasonal variations due to the mountainous terrain and the two weather systems (maritime and Eurasian). Temperatures during the winter are around 14°C along the coast, dropping close to 0°C at the highest points of the study area. During summer, coastal temperatures average 28°C, although these rise sometimes to 45°C in places like Sour.

For much of the study area, average annual rainfall is less than 300 mm. As the mountain areas start to penetrate the area as one goes Northward at the level of Ghazieh, this Eastern edge receives between 300 to 500 mm rain per year. Further North and at the level of Jiyeh, the coastal strip receives over 300 mm while the mountains fall into the next category, with an average annual rainfall between 500 to 700 mm. It should be noted that between 80 to 90 percent of this rainfall occurs between November and March.

2.3 Local Institutional Structure

Based on the Ministry of Municipalities and Rural Affairs (MoMRA) data, there are 708 municipalities and 994 mukhtar councils in Lebanon. Of these, 91 and 79 respectively fall completely or partially in the study area, or in proportional terms 13 percent and 8 percent. One of the best references on the municipalities' conditions is the Lebanese Center for Policy Studies publication in Arabic of 1998 "State of Municipalities in Lebanon". Given that each Mohafaza was investigated with different data collection techniques, it is not possible to draw significant comparisons for the study area since it falls mostly in two different Mohafazas. Map 2.15 shows the local government units coded by type (municipality or mokhtar council).

However, for the four main Caza's found in the study area, a few relevant points can be made.

- Out of the 51 municipalities of Aley, 18 (35%) had been defunct until the last elections in 1998. While for Chouf, that figure rises to 34 or 50% of the total 67. As for Saida, out of 30 municipalities, nine (30%) had been defunct. For Sour, this figure rises to 10 or 56% out of the total 18.
- Out of the 51 municipalities of Aley, 34 (67%) had become deserted during the civil war. While for Chouf, this figure was approximately the same with 43 municipalities empty or 64% of the total 67. The issue of displacement in the South (especially Sour) becomes harder to gauge given the ongoing hostilities since the late 70's.

In conclusion, several local governments in the CAMP area, as in much of Lebanon, have inherited severe problems (fiscal, environmental, urbanization) without having any institutional continuity or track record to base their future work on.

2.4 Socio-economic Context

2.4.1 Demographic context

Lebanon's average population density was around 375/km^2 in 1995, this doubles to 790/km^2 for coastal areas excluding Beirut, according to the Ministry of Agriculture's study on "Biodiversity in Lebanon". As for the study area itself, a more in depth analysis

was developed and is shown in Map 2.4 – Appendix B. The population figures used were those of the K&A LSWWP study (putting the total population for the study area at 434,900), given their availability and that they came within a 5 percent deviation of the results of the 1994 Ministry of Social Affairs (the latter were not used because they are readily available only as an aggregated number by Caza). The other data available to this study, namely the municipal populations from the Ministry of Municipal and Rural Affairs, gave both a minimum and maximum figure. Even taking the average of these two figures (507,582), the result was 16 percent more than the K&A numbers.

Thus the average population density for the study area in 1993 was 707/km^2. The map shows that the majority of localities had densities of less than 500/km^2. The patterns that emerge are that the densities along the Northern end are high, which is to be expected given the proximity to Beirut. Also to be expected is the higher densities along the coast, from Khalde down to Sarafand, with very few exceptions, and high densities around Sour. As for the inland areas, the Chhime area and the Eastern extension of Saida's suburbs are also dense.

A related issue is poverty. Based on the figures from the 1994 Ministry of Social Affairs survey, 20-29 percent of the households in the Caza of Aley and Saida did not satisfy their basic needs. This figure increases to 30-39 percent of households in the Chouf, and rises further to 40-49 percent for the Caza of Sour.

2.4.2 Land Use

Map 2.7 in Appendix B shows the simplified land use categorized into urbanized areas, agriculture, forest, and fallow. The table below shows the areas involved and their proportions. However, this source which comes from a decade old data, is known to be faulty. Among some of the more obvious errors is the lack of urbanized coastal areas in and around Saida and Sour.

Landuse	Area – km^2	%
Urbanization	30	5
Forest	30	5

Agriculture	369	60
Grazing, fallow	185	30
Total	614	

2.4.3 Industry

In this study, several types of industrial zones are listed. These include what the Dar Al Handasah Industrial Wastewater Study terms Preliminary Industrial Zones and those listed by the Investment Development Authority of Lebanon - IDAL (which has been working for a number of years on redefining the industrial zones). Of the preliminary zones, 10 fall within the CAMP area. IDAL has proposed 70 sites, which are at various approval stages, out of which 11 fall within the study zone. However, the perceived lack of clear government policies in the industrial sector coupled with uncontrolled and unregulated siting of industries have lead to industries being located anywhere and not just in industrial zones.

Preliminary Industrial Zones				**'IDAL' Industrial Zones**
Name (Decree)	**Year**	**Type**	**Ha**	**Name (Status)**
Ain Enoub & part of Chemlan (7109)	1974	All	36	Ain Enoub (Decreed)
				Baaourta (Waiting to be sent to CSU)
				Bablieh (Decreed)
Bchamoun (10892)	1976	All	33	Bchamoun (Decreed)
Choueifat (1332)	1971	All	172	Choueifat (Decreed)
				Ghazieh (To be sent by GDU to Council of Ministers)
				Insariye (Decreed)
Damour (9979)	1968	All	6	
Naame (4225)	1981	All	61	
				Naame-Damour (Approved by CSU)
				Sibline (Approved by Council of Ministers)
Saksakiye (5450)	1973	All	11	
Saida suburbs (9016)	1967	I, II	32	
Saida (6552)	1995	All	2	Saida (Integrated into GDU Master Plan)
Zahrani (5450)	1973	All	75	

Sour suburbs (1379)	1991	All	5	
	1966	I, II	14	Sour (Integrated into GDU Master Plan)

Disregarding the different status of the industrial zones listed above, the following list of 16 locations was derived out which are defacto industrial zones within the study area:

- Ain Enoub
- Bchamoun
- Baourta
- Bablieh
- Choueifat
- Damour
- Naame
- Sibline
- Ghazieh
- Insariye
- Saida
- Saida suburbs
- Saksakiye
- Zahrani
- Sour
- Sour suburbs

The results of the second phase survey of the Ministry of Industry were scanned to select all those that fell within the CAMP study area. They were found to total 503, (roughly 10%) which is almost double what would be a national average had they been evenly distributed. These 503 industries were found to be in 76 villages, which when aggregated by municipality and mokhtar council were found to fall within 67 of them, ranging from 1 to 103 per local authority unit. The top three categories found in the area were Foods & Drinks (26%) followed by metal works (13%) and then furniture (10%).

The Ministry of Industry survey found 140,000 workers in the industry section (not including water and power activities), representing 4 percent of the total population. The ERM study found that 14 percent of the total workforce, itself estimated at one million, were in industry. This national average varies in the Caza's in the CAMP study area,

dropping to 5 percent in Jezzine and Sour, 10 percent in Saida, 12 percent in Chouf, and 15 percent in Aley.

Map 2.11 shows the distribution of industrial units by local authority unit. Generally speaking, their spatial distribution is as follows:

- Concentration at the North close to Beirut.
- Local government units with a large number of industrial units tend to be on the coast.
- The industrial units in the Caza of Saida were fewer to the East of Saida or in its Southern end.

Map 2.12 shows the local authorities sorted by the ratio of their total estimated 1994 population divided by the number of industrial units. It shows that the distribution of industrial units is more even when compared to population distribution, which may indicate that environmental problems due to industry are quite widespread and prevalent.

2.4.4 Agriculture

Map 2.8 in Appendix B shows the agricultural land use categorized into four types, along with non-agricultural land use. The table below shows the used areas and their proportions. However, this information is based on data that has become relatively outdated, in addition to the fact that it was not considered very accurate at the time (1990, see Appendix C).

Landuse	Area – km^2	%
Temporary Crops	189	30
Citrus and Banana	109	18
Olive	60	10
Other	11	2
Non agricultural	245	40
Total	614	100

On the other hand, Map 2.9 in Appendix B is based on the more recent 1997 survey conducted by the Ministry of Agriculture on a cadastral area basis. The results were

further refined for the purposes of this study based on the 1998-99 agricultural unit comprehensive census.

Maps 2.8 and 2.9 confirm a concentration of agriculture in the Southern half of the CAMP area (citrus, banana, temporary crops, etc.). However, these maps do not clarify the reported recession in this sector during the last five years.

Agricultural practices are based on the use of agrochemicals that are applied widely and in a disorganized manner. Import controls, storage, distribution, end users, and policy makers are all in need of more effective control and management, especially in the case of pesticides. Soil erosion and degradation are much in evidence. The neglect of terraces and overgrazing are contributing to such problems, and as in other areas, primarily require strengthening farmer support services as remedial measures.

2.4.5 Tourism

There have been few developments during the last three decades that were specifically targeted for non-domestic tourism, with the exception of hotels. As such, the tourism sector can be better thought of as a services' sector. However, domestic tourism has seen several major efforts, many of which pose environmental problems. Among these are coastal erosion from construction of breakwaters to form beaches, algae build up, land reclamation into the sea, non-completion of buildings, and damage to habitats on the coast. Such occurrences are concentrated in Beirut and to the North, but there are also a few examples in the CAMP area of such developments. The tourism development was increasingly aggravated by the Israeli occupation and frequent risks presented in the Southern area of Lebanon.

2.4.6 Cultural Heritage

As stated by the ERM study on the State of the Environment in Lebanon, there has been no systematic archeological or cultural heritage inventorying or mapping. However, a simple listing of 'known' sites with a brief commentary is available, and the selection that falls within the study area is reproduced below. Out of the 167 'known' sites in Lebanon, 21 (13%) were found in the area, which is roughly double the density of what could be

considered the national average (assuming a homogenous distribution). However this is less than what would be expected considering that this coastal area represents one third of Lebanon's coast where most ancient cities were located.

Map 2.5 in Appendix B shows the distribution of cultural sites by Municipality; it is clear that the majority are found along the coast, with the major exceptions of Chhime and East of Saida.

Generally speaking, cultural sites in Lebanon are in a very poor state, and those visited for the purpose of this study in the CAMP area confirmed this opinion. The main causes of this state are the lack of attention from the relevant authorities (themselves complaining of lack of resources) and theft (Israeli Army and Lebanese citizens).

Caza	**Village**	**Code**	**Comments**
Saida	Aadloun	RHS	Prehistoric cave on the main road
Saida	Aadloun	LHS	Prehistoric cave settlement on main road
Saida	Aadloun	NCHS	Second cave next to main village
Saida	Brak et Tall	RHS	Coastal settlement tell, unexcavated, within orange groves
Saida	Bramiye	RHS	Phoenician rock tombs + other remains, mostly robbed
Aley	Chemlane	RHS	Mountain village
Chouf	Chhime	RHS	Mountain village, Bizantyne remains
Chouf	Damour	CNHS	Coastal town destroyed, being rebuilt, ruins of Ottoman silk factories
Saida	Jall Aajram	RHS	Prehistoric settlement with excavated houses, educational potential
Chouf	Jiye	RHS	Local shrine, important Byzantine/Roman settlements
Jazzine	Kfar Jarra	LHS	Bronze Age tomb finds, no potential for development
Jazzine	Lebaa	RHS	Bronze Age, tombs now destroyed
Sour	Maachouq	LHS	Village, rich in archeological remains
Chouf	Majdalouna	LHS	Village architecture
Chouf	Nabi Younos	RHS	Village and spring
Saida	Qraiye	LHS	Bronze Age, tombs now destroyed
Sour	Ras el Ain	NCHS	Functioning Roman aqueduct, great future tourist potential
Saida	Saida	NCHS	Old Ottoman city, restored Khan, Main Mosque (Crusades

			cathedral) Agha Khan prize, great potential
Saida	Sarafand	NCHS	Coastal town + excavated settlements, (2nd-1st mill. BC), development potential
Sour	Sour	WHS	Phoenician maritime capital, Roman hippodrom, aqueduct, overbuilt, great future development potential
Saida	Tanbourit	RHS	Phoenician tombs, mostly robbed

Source: Helga Seeden, 1995, as appeared in Annex 20A of the 1995 "Assessment of the State of the Environment" Final Report (ERM).

These sites have been classified according to the following method:

Classification	**# in study area**	**# in Lebanon**
World Heritage Site (WHS)	1	6
National Cultural Heritage Site (NCHS)	4	13
Cultural and Natural Heritage Site (CNHS)	1	30
Regional Heritage Site (RHS)	10	70
Local Heritage Site (LHS)	5	56

2.5 Environmental context

By its very nature, the environment is linked to all sectors. While actual investigations of the effect of the various sectors on the environment is not in the scope of work of this study, every effort has been made to have sectoral perspectives on the environment to the possible extent based on availability and access to primary and secondary data.

According to REA report, the coastal zone contains about 60 percent of the Lebanese population, with an average population density of about 1,600 person/km^2. The statistics of this study illustrate the intensity of demand on natural resources in the narrow coastal zone; even in the hills, up to 1,000 meters, population densities are high compared with other parts of the country, thus causing a considerable pressure on the coastal ecosystems, land, and water resources.

The highest and most visible environmental impact is in the urban sector. This is mainly due to the period of war whereby the composition of the population have changed with a continuous decreasing number of agriculture workers and increasing number of brain migration. Furthermore, the absence of master urban plans in most of the municipalities,

as well as the illegal constructions have added to the uncontrolled expansion of the coastal agglomerations.

In general, there is evidence of environmental degradation, which is not necessarily linked to one specific sector. Sand and gravel extraction, air pollution, loss of vegetative cover and fauna are disparate examples of environmental dangers but all linked and found in a common geography, namely the coast. However, some of the main environmental issues encountered in CAMP area are elaborated below:

2.5.1 Water Resources

Four water authorities serve the CAMP study area. The DAR study on industrial waste management provided the following key indicators with regards to these authorities based on the assumption that losses would be reduced to 35 percent.

Authority	Est. '95 population	Existing resources m^3/d	Ave. net supply l/c/d
Barouk	570,000	59,000	56
Saida	167,400	44,060	171
Naba' El Tasseh	390,800	74,378	124
Sour	315,400	67,095	138

One third of Lebanon's 17 permanent rivers pass through the CAMP area. Map 2.10 presents the permanent and seasonal rivers. Within these rivers, two of them were currently declared under protection by the Ministry of Environment: Damour River in the Caza of Chouf (Decision no. 129/1, year 1998) and Awali River in the Caza of Saida (Decision no.131/1, year 1998)- See Appendix D. It is to note that the Decision pertaining to river classification is identical for all protected rivers. This usually includes clauses defining the area to be protected; It also specifies any activity to be carried out on any point of the river within a perimeter of 500 meters, which becomes 1500 meters when it is related to quarries and industries. The Ministry of Environment and the Directorate General of Urban Planning specify rules and regulations for any permit for constructions and developmental projects. These regulations are applied on all constructions whether industrial, human settlements, touristic and agricultural projects.

Various studies have looked at the water sector in depth given its problematic nature. Southern Lebanon has abundant water resources, still this is not reflected in water supply

for domestic and agricultural consumption. To begin with, much water is lost into the sea or evaporation. Although in the Southern end of the CAMP area irrigation canals supply water is from the Litani, however, much is lost due to the deteriorated state of the canals. Elsewhere, private artesian wells sometimes overexploit aquifers leading to salt water infiltration (recharge problem). Further inland, certain areas have no supply networks whatsoever. This has led various agencies to resort to the digging of artesian wells, a practice often conducted by private citizens in an uncontrolled fashion. One can summarize the problems as such: inefficient use by irrigation; overexploitation by artesian wells, salt water infiltration, insufficient planning and management, poor maintenance of supply network (domestic and agriculture), absence of conservation or recycling measures, pollution from wastewater, pollution from industrial activities.

The Regional Programme for the Social and Economic Development of South Lebanon shows a typical example of the difficulties encountered in water resource management on the coastal area between Saida and Sour. In the Plain of Sour, the irrigation water arrives in abundance within the framework of the Qasmieh-Ras El Ain irrigation project, but the delay in the modernization of irrigation networks lead to high water consumption. To the North, in the plain of Ghazieh, the Israeli destruction due to bombardment led to multiply drilling of artesian wells whose swarming leads today to an over-exploitation of coastal aquifer, which is becoming itself unable to self-recharge at the lowest water level. This results in the infiltration of salty waters into the water table.

According to the same study, the Government engaged rehabilitation works regarding the Project Qasmieh-Ras el Ain, which seeks to reduce the current water consumption on the coast. It also conceived a pilot irrigation project over 100 hectares situated between Sarafand and Qlaileh, to the North of Litani.

As mentioned above, there are high losses and wasteful application in the CAMP area, where irrigation has a significant presence. This has been caused partly by low charges levied ($0.02/$m^3$ in 1995). Improvements in this area require participation at many levels, focusing on the Ministry of Agriculture (MoA), local authorities, and farming communities. Consequently, this involves strengthening institutional capacity and outreach and support programmes. To date, Ministry of Agriculture remains severely underfunded and so its institutional capacity is still low. As for local authorities, they

have only recently started to take shape and in many cases have financial problems, as well as priorities that typically exclude agricultural reforms.

Water quality is quickly becoming a serious problem and one that is frequently on the public's mind. The largest coastal spring in Lebanon (Ras el Ain) is contaminated according to the REA Report. Likewise, the vast majority of tapped coastal freshwater sources are contaminated. The coastal water table is affected by the infiltration of chemical products (pesticides) and industrial effluents as well as household wastewater. The Litani River is also subject to a high contamination. Added to that, the contamination of the springs, which while serving to canalize water as drinkable water, are not protected at all, and it is very frequent to meet swimmers at their sides (e.g. Ras El Ain).

Two studies on water quality are discussed here, that of Jurdi and the National Central Laboratory (see Appendix E for discussion of data sources).

Based on Jurdi's findings, the top three water sources during the rainy season are the networks (62%), springs (17%), and private wells (11%). During the dry season, these figures change to ground water (54%), springs (16%), and wells (12%). Another interesting finding which helps in determining bacterial pollution is the land use for areas surrounding water sources, reproduced below:

- 36.6% residential;
- 33.5% unidentified;
- 14.5% residential and agricultural;
- 12% agricultural;
- 7.4% unclassified;
- 0.8% animal production;
- 0.2% industrial.

One of the most significant findings dealt with water treatment: over 96% of the samples were not treated in any way. These results refer to a study made in 1993; and since that time water treatment stations have been implemented in a few locations. Jurdi's findings quantified the bacterial pollution as follows:

- Nearly 70% of natural water sources are subject to pollution;
- 60% of the water distribution network are contaminated;

- The level of pollution is not restricted to a specific geographic area, rather it is a general phenomenon for all of the study areas;
- Some areas that use cesspools have pollution levels that can reach 67%;
- Some areas that use sewage networks have pollution levels that can reach 28%.

As for the NCL '93 test results, 61 percent of the sample (720 sources) were found to have bacterial pollution.

The following table reproduced from the LSWWP study compares the results of the two studies with regards to pollution levels.

Water Source	Jurdi	NCL
Spring	70%	80%
Well	56%	85%
Tank	62%	40%
Network	63%	49%

2.5.2 Industry

Few industries in Lebanon emit air pollutants as part of their industrial processes, yet many generate their own power, and thus contribute to sulfur emissions and other forms of air pollution.

Industrial solid waste, where the bulk of them can be considered as non-hazardous, is disposed of in several ways. These include being mixed with municipal waste, informal on-site incineration, disposal to wells, and informal dumping. Typically the concentration of this disposal is such that contamination of ground and surface water is inevitable.

Industrial liquid effluent is virtually untreated, and discharged mostly to surface and coastal waters. Serious environmental threats are being witnessed in many places; and given the surface waters that are typically affected, these problems are often carried farther afield than their point of origin. A good example are the various industries in Zahle, sugar factory in Anjar, and tanneries in Machgara, all of which pollute the Litani

river which is used, among other things, to irrigate much of the agricultural land in the South.

One of the primary sources of information on industrial waste is the Industrial Waste Master plan, which was completed by Dar Al Handasah in 1998. This study, which came after the Ministry of Industry's survey, began with a questionnaire and a visual-based survey of 927 facilities (4.2% of the total). Only 6 percent of these facilities supplied any information about the quantity of waste produced. Of the 927 facilities, 164 (0.7% of the Ministry survey) were selected for sampling and testing. One of the major conclusions of the study was that most industries operated dry processes that generate little or no industrial wastewater.

This section discusses also oils, which are one major type of waste, although they are not always an industrial by-product. Used oils, estimated to be around 340,000 liters in 1994, are typically being disposed into drains, and hence ending up in the sea. It should be noted that almost all sources of such oils are either immediately on the coast (power plants) or adjacent (private generators). This is expected to pose a low-level chronic pollution problem. However, this quantity of oil is dwarfed by the 8 million liters estimated to be annually disposed of in a similar fashion due to vehicle oil changes.

Oil tankers moving along Lebanon's coast pose a potential hazard, especially given the complete absence of any facilities or contingent plans to deal with any spills. Of more chronic danger is the random cleaning of storage tanks by such ships. Although this is illegal and port authorities are apparently trying to increase their capacity to prevent such practices, press reports still bring to light many cases of vidation.

2.5.3 Quarries

Of the 279 quarries found in the database (see Appendix E), 262 had geographic coordinates of which 21 (or 8%) were found to be in the CAMP study area. The data provided are acceptable in terms of completeness, with almost 70 percent of the cells being completed. A brief analysis of the quarries in the study area revealed the following

(percentages are based on responses with the number between brackets indicating the number of responses):

- 62% are licensed (16);
- 72% are operational, 14% stopped, and 14% abandoned (21);
- The average area in hectares is 40, with the smallest 3 hectares only and the largest 120 hectares (12);
- The average annual yield in cubic meters is 435,000, with the smallest just 8,000 and the largest 1 million (8);
- Two thirds have exploited less than a fifth of the area, while the rest have exploited between one to two thirds (9);
- All market their products nationally (9);
- All but one perform open pit excavations (13);
- 73% use explosives (11);
- All but one do not adopt standards (6);
- 79% are situated such that they use local roads (19).

Among the conclusions to be drawn here are that most of the quarries are operational, their size and output are not negligible relative to the size of the average municipality, most are far from reaching the limit of exploitation in the near future, explosives are typically used while standards are not, and the location almost always leads to local roads being used to transport goods. All of these facts point to severe problems for the local inhabitants and the environment as a whole.

The situation is set to become worse given that the certain high-ranking government officials mandated to rule on quarries have recently begun to advocate that quarries should be allowed to operate as long as local residents do not object, thereby bypassing national regulations that have been called for in the past.

Map 2.13 shows the distribution of quarries, and it is interesting to note that the majority are located in the Northern end of the CAMP study area. The 21 quarries fall in ten municipalities and three mokhtar councils, with the municipality of Aytat being the hardest hit (four quarries) followed by Sibline (three).

2.5.4 Solid Waste

A number of studies have estimated the average domestic waste generated. The ERM study adopted 0.8 kg/capita/day, which in 1995 was thought to yield about 1 million tonnes a year. As for industrial waste, ERM based their work on the Ministry of Industry Industrial Units census and derived an annual yield of 326,000 tonnes. Given no reliable data on employment in the commercial sector, ERM estimated that commercial waste ranged between 228,000 to 342,000 tonnes per year. Construction (or demolition) waste, which is largely being used for landfills, was expected to produce at least 4 million tonnes annually. Finally, hospital waste was estimated to total around 11 tonnes per year.

Currently the bulk of solid waste is dumped in many sites across the country, a number of which are along the coast. Lately, a sanitary landfill has been initiated by CDR next to the village of Naameh, which did not prove its efficiency yet.

Coastal waters are being harmed by such dumping practices, where littered solid waste remains floating and pollutes the seabed, items getting tangled in fishing nets and boat engines, leachate being released into the sea, as well as contamination. Surface waters suffer similar problems, while ground waters also suffer the added problem of infiltration of toxic contaminants from industrial solid waste.

2.5.5 Waste Water

Data on 51 communities falling within the study area were gathered and analyzed from the K&A LSWWP '93 study. Of these, 17 are sewered and 34 non-sewered. Given the relative sizes of these communities, half to two thirds of the population are served by waste collection systems. Given the mix of data sources, this ratio cannot be considered to be representative. Among some of the results are:

- 10% discharge into stormwater systems;
- 76% discharge into valleys;
- 73% discharge into septic tanks;
- 18% discharge directly into the sea.

Note: Most communities use more than one disposal system.

The issue of ground water contamination is harder to gauge at this stage, given that several factors affect it, such as location and depth of groundwater, conditions of sewers and septic tanks, geology, and slope along valleys. Similarly, it would be presently difficult to accurately estimate the amount of sewage that reaches the sea through surface runoff (relevant given 76% of communities in sample discharging into valleys).

Among some of the problems facing the environment due to the continued non-treatment of sewage are:

- Percolation into aquifers and contamination of water sources;
- Eutrophication along the shoreline;
- Health risks to bathers;
- Health risks to fish consumers;
- Aesthetic considerations;
- Ponding of sewage;
- Insect breeding.

2.5.6 Energy

There are two fuel oil power generation plants within the study zone: one at Jiyeh and another new one at Zahrani (the latter having profited from an Environmental Impact Assessment study, which was conducted, however, after construction had begun). Lebanon's power generation plants typically produce carbon monoxide, carbon dioxide, sulphur dioxide, oxides of nitrogen, and particulates. Dar Al Handasah analyzed samples taken at Jiyeh, the results of which are reproduced below:

Liquid Samples

Parameter	**Result**
PH (Unit)	8.09
Total Dissolved Solids (mg/l)	40832
Total Alkalinity (mg/l)	145
Total Nitrogen (mg/l)	0.08

Total Phosphorus (mg/l)	<0.05
Total Heavy Metals (mg/l)	0.025

Semi-Solid Samples

Parameter	**Result**
Caloric (Cal/g)	1080
Total Sulfur (%)	0.22
Total Halogens (%)	0.008
Total Hydrocarbon (%)	12.32

Also based on the Dar Al Handasah study, it was noted that around 98 percent of total fuel consumed in Lebanon in 1993/1994 were coal, fuel oil, gasoline, and gas oil. These types of fuel are the main sources of sulphur dioxide and nitrogen oxides. In this period, these two power plants produced around 97 percent and 95 percent respectively of total SO_2 and NO_X produced in Lebanon. At that time, Jiyeh was consuming around 35 percent of fuel oil (Zahrani power plant was not completed yet); in other words around one third of all SO_2 and NO_X produced in Lebanon was emanating from Jiyeh power plant.

Gas Samples

Parameter	**Result**
CO	<0.4
CO_2	8000
HCl	<0.10
HF	<0.04
H_2S	Zero
NH_3	<0.15
NO_2	<0.15
Ozone	<0.005
Petroleum content	0.20
SO_2	8.00

Note: All parameters are measured in ppm.

2.5.7 Air pollution

Air pollution is believed to be concentrated along the coast primarily due to the concentration of Lebanon's inhabitants in these same areas, as well as prime point sources (power plants and industrial plants), and temperature inversion due to the proximity of the Lebanon mountain range. However, little data exist to quantify the pollution or more importantly show its spatial distribution in the CAMP area.

2.5.8 Natural resources, fauna and flora

The REA report refers to dangers of shoreline erosion, partly from outright sand and gravel extraction (off shore, beaches, and riverbeds) or due to loss of coralline reeves which function as wave barriers. The 1996 study by W. Hamdan and M. Mroue reported an estimated loss of close to half a million cubic meters of sand and gravel, with a significant proportion being in the CAMP area. While this activity is now considered illegal, offshore dredging is continuing in the CAMP area legally (in at least one example for the SOLIDERE project of reconstruction of the Beirut Central District) and illegally (as in Jiyeh).

Coastal woodlands, always according to the REA report, are reduced dramatically. Of the three main reasons, goat grazing and charcoal production and urbanization, it is the last that can be expected to remain more relevant in the years to come. Natural carob tree vegetation remains in only two areas in Lebanon, one of which falls South of Damour in the CAMP area. Other natural woodland vegetations remain in very few coastal areas, including slopes close to the Damour and Awali rivers.

Little recent work has been done on birds in the coastal zone, but it is believed that the CAMP area still has pockets of bird life near vegetated river banks and mouths, namely Damour, Awali, and Litani rivers.

Freshwater fauna are believed to be suffering from pollution, given prevailing pollution of Lebanon's rivers. As for marine fauna, dredging, pollution, and over exploitation have all led to decreased stocks.

2.5.9 Forest Fires

No pertinent data is available regarding this section except those reflected in the Map 2.14. in Appendix B.

2.5.10 Storm Water Drainage

While landslips and road washouts occur rarely, the more serious problems related to storm water drainage are that some sewage networks are connected to them, and that during heavy rainfall incidental overflows occur from sewage networks into the stormwater systems.

2.6 Education

Map 2.6 in Appendix B reveals a more even distribution of public schools than of other resources that have been spatially analyzed in this study. Certain trends seen elsewhere do reappear: greater number of schools at the Northern end, in and around the cities of Saida and Sour, and around Chhime. However, it should be noted that information on private schools, which constitute a sizeable portion of schooling in Lebanon, is not readily available. Furthermore, what has not been taken into account in this study is the size of each public school.

Section Three

CAMP-Lebanon municipalities

3.1 CAMP-Lebanon Municipalities

CAMP-Lebanon study covers an area of coastal stretch, which starts from Khaldeh to Sour in the South. As all along the Lebanese coast, the basic environment and development issues are almost the same. However, these problems could be in some cases more serious in one city than in another due to the lack of resources or technical expertise. Therefore, and after consultation with various stakeholders involved within CAMP Lebanon, eight municipalities were identified to be studied in-depth, these are:

- Aramoun- Ain Ksour- Basatin
- Damour
- Jiyeh
- Chhim
- Saida
- Naameh
- Sarafand
- Borj Chemali.

Criteria upon which the choice should be taken for the selection of three pilot areas out the eight municipalities seemed difficult. However, according to the directives made during the visit of the MAP mission of April 1999 to Lebanon, whereby the three pilots should be chosen on the sector level (industry, agriculture, tourism and/or urban planning), The eight spot areas chosen have a high impact of one of the above-mentioned sectors; and in some cases, they possess a potential influence of multi-sectorial presence. The starting point was the classification of the regions under these categories.

3.1.1 The Municipalities of Ain Kssour, Aramoun, Basatin:

Description of the area

Geographic and Demographic characteristics: The three municipalities extend from the main highway all the way to the Eastern edge of the study zone. The overall area is 15

km^2 (with Aramoun accounting for almost 78%). Altitudes start at 100 and reach 960 meters, among the highest points in the study area. The total population estimated for 1994 was 7,600 (this last figure is clearly too low compared to the 20,000 estimated by the municipalities themselves).

Geology & Hydrogeology: The three villages fall with the C4 formation, which is the fractured limestone that forms one of the biggest reservoirs in Lebanon. This reservoir extends from this region south to Saida, with a thickness varying from 600 to 1000 m. However, the exploitation of the reservoirs in these villages appears to be the most important. This high exploitation, which is accompanied by a high pollution, is causing a sea water intrusion and thus a significant lowering of the water table.

Major sectors in the area: Employment in the area is scattered between the public and private sectors. Agriculture and industry do not account for significant employment. However, the agricultural areas in the regions occupy almost 30 percent of the total surface. The major problems of the people working in the agricultural sector is the bad financial revenue and the uncontrolled use of pesticides.

On the other hand, and being characterized by its short distance from Beirut and by its green areas, the region is receiving a high number of visitors for open air activities. The local inhabitants have estimated the number of cars coming to the region (in the vacation days) by 1,500 car per day. The region is not prepared for such activities, which is causing a sporadic disposal of visitors wastes. In addition to the risks of fires which cannot be controlled due to the lack of equipment and access roads.

The status of the municipality: Although the CAMP program and criteria call for selecting single municipalities, this coallision of municipalities forms an interesting assembly and geographic continuity. The 1999 annual budgets were $1.6 million for Aramoun, $130,000 for Bsatine, and $100,000 for Ain Ksour. Aramoun had a municipal council prior to the latest elections in 1998, which provided the current council with a healthy cash surplus in excess of $1 million and a property housing the municipal offices. Bsatine also had a municipal council prior to 1998, and has recently rented an office (three rooms), while Ain Ksour did not have a council prior to 1998, and has been granted the free use of two rooms in a church facility. The project accomplished by each of the

current municipalities after the elections were limited to cleaning and weeding the borders of the roads. The main constraint in executing any project is the blocking of the municipal budget in the government treasuries.

The decision-making of the three municipalities is done in a democratic way and without any consequent conflict. Furthermore, the collaboration and the contacts between the three municipalities are very well established due to the close by locations and the social relations. All of the three municipalities showed a positive attitude in a dynamic collaboration for the establishment of any developmental project in their area. However, and like the majority of the villages which are lacking the money and the elementary needs, their interest is more directed towards the kind of help that such projects would bring them. Therefore, their interests are more oriented for example towards direct and rapid financial assistance for installing sewage pipes. The environmental issue (in general) could be considered as a priority only if it is coupled with an economic benefit or it is bringing a solution to their daily sufferings.

The local inhabitants: Being situated near the capital, these areas are not suffering from the migration of the young class of population. However, these villages have marked a dangerous frontier during the war. Therefore, they have a high number of displaced people and damaged houses (especially the Ain Kssour region).

The level of education is considered good in this area. Aramoun has two public schools while Bsatine has one. There are a few sport/cultural clubs in the villages, but these are mostly non-active or not particularly effective. No women-based or oriented NGO's are present, nor cooperatives. However, the members interviwed from the three municipalities have assured us the good will of collaboration of the local habitants with the projects taking place in their area. In addition, the contact is good between the municipality members and the inhabitants.

Sewage System, Waste & Major risks: The high pollution of the underground water is caused by the excessive population density (especially in the area of Aramoun), and the presence of the bottom less sewage discharge wells. Added to this, the shallow topsoil in the region and the consequent disposal of the septic tanks on the rocks with zero filtration to the bacteria and the detergents.

In all three municipalities, solid waste collection is handled by a private contractor, SUKLEEN, according to an agreement with the Council for Development and Reconstruction. As is the case with other municipalities where SUKLEEN handles this task, the municipality is not allowed to know the contract value or terms between CDR and SUKLEEN, and hence cost effectiveness cannot be measured locally.

The region, including lands in the three municipalities, has been one of the hardest hit amongst the CAMP area in terms of forest fires, especially during 1998. Like most villages, facilities for fire-fighting are virtually non-existent, while the local population have not still developed the habit of clearing their lands in order to prevent the spread of fires. The three municipalities do appear to have stepped up efforts to clear up the brush along roads and in some cases within public lands. Aramoun estimates its public lands at 15 hectares, while Bsatine estimating slightly more at 20 hectares.

Within the CAMP area, this region is most affected by land mines, which are present in all Bsatine and Ain Ksour to varying degrees, both in public and private lands. In most cases mined areas were never mapped, and so removing them will be a slow process to be undertaken at a national level.

The environmental importance of the execution of CAMP in this area: As mentioned above, the area reflects a good image of all the Lebanese villages which had suffered from the lack of assistance and infrastructure development. Like the other regions also, these three villages possess an educated and optimistic group of local authorities who are willing to build and develop the region.

Therefore, the importance of the execution of the project in this area is highlighted due to many factors:

- The status of the municipality members which is considered to be good on the education level, but is in need for a strategical organization as well as an environmental and economic orientation.
- The distinguished case of the exploitation of the underground water reservoir.
- The lack of incoming resources of the municipalities
- The existence of the natural areas that are owned by the municipalities.

- The beautiful sea site of these areas.

In having similar conditions and resources, the establishment of a capacity building program, together with an income generating project, would assure a continuous development of the area in the years that will precede the CAMP. Therefore, a CAMP project in this area would have an important impact on the perception of the local authorities of the idea of environmental conservation together with economic resources. This could be done through the development of an eco-tourism plan for the natural areas, as an example. The pilot project of CAMP, in this area, would give a good impact on the neighborhood and on the visitors due to its nearby location to very dense agglomerations.

3.1.2 The Municipality of Bourj El-Shemali:

Description of the town

Geographic & Demographic characteristics: Borj El-Shemali lies around 2 km East of Sour, an area of 10.5 km^2. Its topography is relatively gentle, with altitudes ranging from 30 to 150 meters. The estimated population of 1994 is 10,200. Added to this is the Palestinian camp inside the village and the gypsy region in the upper area of Bourj El-Shemali.

Geology & Hydrogeology: The geological formation in the area is the Quaternary formation towards the coast and the Eocenian formation towards the hills. This later includes marly horizons, which permits more isolation for the contamination of the underground water. The underground water reservoir in this area is deep. The digged wells are at least at 450m depth. With these conditions, the contamination of underground water is less serious then in the region described before.

Major sectors in the area: Employment in the area is mainly in the public sector, with the military services and private sectors accounting for the bulk of the other employed citizens. Agriculture and industry do not account for significant employment. However, both of these activities exist in the village. The industries in Borj El Shemali are few, with the most notable being three factories for soap, plastics, and PVC. The plastic industry is situated inside the village in a very crowdy area. The municipality has managed to move

this industry outside the region due to the damage done to the neighborhood. Agriculture in the area is scarce and does not provide the main income for the inhabitants, with the crops most common being tobacco and vegetables. Besides, there are four to five beekeepers but no animal breeding.

The urban sector is causing a severe problem with a very high number of illegal buildings near the main road, and to-date the majority have not gone through the process of settling their situation, although this would provide significant income. However, new illegalities have been reduced significantly since the municipal council came into being. In addition, there are around 1,000 dunums of public land; however, this is mostly arid and rocky in nature and belongs to the Ministry of Finance.

The status of the municipality: Like many other municipalities in Lebanon, Borj El Shemali had suffered from the absence of a municipal council for many years. The area has marked contemporary political significance, with a social and cultural center having been the birthplace of the spiritual start of the Amal movement. The municipal council benefits from having a diverse group. and this has lead to constructive criticism within their regular workings. However, this internal situation is causing a severe conflict between the members, which is retarding the achievement of the project in some situations. The monthly revenues are around LL7M ($4,700). The municipality is located in a building, which was previously a public school, and as such it has more facilities than necessary. A Palestinian refugee camp, named after the town, falls within the municipality jurisdiction and is loosely delimited by sand barriers closing off access roads leaving only two main access roads that are guarded by both Lebanese Army units as well as Palestinian armed militias.

The municipality relations with the neighborhood villages are little and limited to little contacts from the consequent political movements and social links. Several projects have been implemented in this area during the last year, most notably public lighting and upgrading of sewers (both covered and open trenches). The Council of the South has carried out these projects. The municipality is managing the waste collection and disposal in a nearby uncontrolled landfill. The reaction of the municipality representative for the establishment of the CAMP project in the village was a very positive. He encouraged the external assistance, in order to cut down on the internal conflicts.

The local habitants: It is estimated that 50 to 60 percent of the population have reached the Baccalaureate level, while 15 percent have a university education. Most of the young population is still living in the village. There are a number of schools in the village; one public, three private, and one for the United Nations Relief and Works Agency (UNRWA), which deals exclusively with registered Palestinian refugees. There is one scouts group and an NGO that deals with sports, social issues, and culture (named the Reform Organization), it is not especially active. No women-based or oriented NGO's are present nor cooperatives.

Due to the lack of established projects, there has not been so far any collaboration between the municipality and the inhabitants. However, the municipality members assured to have an efficient participation of the villagers in the projects that could take place.

Sewage System, Waste & Major Risks: Moreover, most of the households are connected to sewage systems although a number of these, including all the Palestinian refugee camp, are open trench type. Other houses have septic tanks. The open trenches also serve as storm water drainage. The sewage flows by gravity and connects to the sewage system of El Bass, from where it flows into the sea.

The environmental importance of the execution of the CAMP project: The main constraints that this village is suffering from are the consequences of the war. These problems are mainly apparent in the illegal urban proliferation and in the political conflict present inside the municipal council. However, an external presence would have an impact on the procedure of work in the village and, therefore, serving mainly as an outside authority to cut down on conflictual situations. On the other hand, the village lacks any type of resources. In addition, the main activities are in the public and military sector.
The environmental importance of the execution of a CAMP project in this area is limited due to the presence of the Palestinian camp inside the village.

As to the impact of CAMP to the neighborhood, it is difficult to be evaluated especially with the lack of a determined project activity.

3.1.3 The Municipality of Damour:

Description of the village

Geographic & Demographic characteristics: Damour is a well-known coastal village that lies half way between Beirut and Saida. The territory of the village is wide. Its area is 10km^2 with a coastal length of under 6 km, and altitudes reaching 290 m. It includes natural forests covering the hills, the Damour valley and river and sandy virgin beaches; In addition to 400 hectares of agricultural area.

It was one of the first villages to suffer from massive displacement, with very few of the inhabitants yet to return. This has resulted in its environmental conditions being relatively better than in other areas since there were fewer human pressures during the war years. Population figures are hard to come by given the unsettled situation of the displaced, but the K&A 1994 study was based on 16,400. The council estimates that 320 out of 7,000 have returned. Nevertheless, there are many living in Damour who add to the environmental pressures. These include two regiments of the Lebanese Army, Palestinian armed elements in the hills on the edge of their camp in Naameh, as well as 3,000 Syrian soldiers occupying 60 hectares.

Geology & Hydrogeology: The geological formation in the Damour area is more protective for the underground water reservoir than is the case of the first group of villages in this study. The geological C6 formation is an isolation layer, which permits a better filtration for the water in the case of septic tanks. The water resources of the village include the river, which is considered as the third river in the CAMP area (after the Litani and the Awali) as well as the underground water.

Major sectors in the area: The major activity in the Damour area is agriculture due to the presence of suitable land and water resources. The Damour municipality has built two dams and 16 km of irrigation networks to feed its agricultural lots. However, there is a severe water pollution coming from upstream areas. The pollution is both in the form of soluble particles (industrial and sewage) and solid waste. The council has a crew of eight persons who clear out the irrigation system on a daily basis. While the majority of the

agricultural land used to be dedicated to citrus trees, there was a move to bananas but the slump in prices has led farmers to diversify their crops. Currently, the municipality is working with the FAO in order to establish an appropriate plan for the plantations. There are few industries in Damour, with the few that exist concentrating on food processing. Other facilities include five schools, of which one is public (this was recently renovated with funds from the EC).

Damour used to be the silk capital of the Middle East, and there are Phoenician, Greek, Roman, and Crusader sites in the area. The municipal council has also decreed part of the old quarter of Damour as a pedestrian zone that should be developed into an artisanal tourist area. This should be strengthened by their attempts to have the local school expand its services into teaching crafts.

The seashore, all of which is private, is currently unused, except by the occasional soldiers due to the nearby training grounds. It is assumed that the beaches are polluted given the Damour River outflow is itself heavily polluted. There is no fishing currently on the shores of Damour. There are 200 hectares of public land, part of which is being earmarked for residential development. This is pending a zoning plan which was reviewed and modified by the council and which is awaiting approval.

The status of the municipality: The council is composed of all of the members of a single list, and has an annual budget of LL 1,200 million ($800 million). The municipality is constructing its own sizable headquarter in an appealing style, hoping to convince the inhabitants to refrain from building ugly structures as is typical along the entire coast.

The meeting with the president of this municipality was a distinguished one. His objectives and approach were determined, autonomous and pragmatic. The general impression of the discussion revealed the optimistic and decisive side of the council to solve the city's problems. The actions taken by this municipality are also important. The most important is water supply, which was until recently a severe problem. The government installed a pumping station on the head of a local well and built water supply networks for the village but the project was basically intended to carry most of the water to Beirut. The council took action and forced the government to disconnect all the networks taking water out of the municipality. Among the projects executed also, is the

forestation. Last year a significant forest fire attacked a forest of 600 trees, and the council was unable to control it due to the lack of access roads. Experts from other villages were called in to prune the trees, which have been revived. In addition, the council has built an access road and planted 6,000 trees and cisterns are watering them. The municipality has also worked on a urban master plan for the village whereby a tourist pedestrian zone, a public beach, a fishing harbor, an industrial and an agricultural zone are perceived. As mentioned above, this plan is waiting for approval. The president of the municipality is making his international contacts to acquire external assistance for the development of the village. He was interested to be exposed to the CAMP project and work closely with the team whether the project is executed in his area or not.

No contacts of the municipality with the neighborhood are mad yet due to the lack of the need for a common regional participation. However, the attitude of the members is very positive and open for the establishment of fruitful relations.

The local inhabitants: This area has witnessed a very early displacement of all the inhabitants of the village of Damour. According to the president of the municipality 328 families have came back out of 6,000 families. The NGO present is the St-Joseph organization. The president of the municipality is working on establishing new NGOs.

Waste, Sewage System and Quarries: Sukleen collects solid waste and as with all other municipalities where this private contractor assumes this role, the municipality cannot obtain any information on the contractual terms. The council clearly prefers terminating the contract and assuming this role themselves, in order to assume their own environmental decision making and due to their belief that they could be more cost effective.

A new sewage system has been installed but none of the households are connected to it. This system would in all cases dispose of the sewage into streams and eventually into the sea. Households therefore currently use cesspits. One quarry used to be active, this is currently closed and it appears that the council will maintain this situation.

The environmental importance of the execution of the CAMP project: The execution of the CAMP project in this area could have a very positive impact on the environment of

the Damour village and the region. This is expected due to the following reasons:

- The available assets including agricultural areas, forests, sandy beaches and marines resources.
- The institutional capacity and incentives
- The geographical location of the village, being on the coast and the beginning of the Chouf mountain area and the South of Lebanon.
- The actual conditions form an ideal situation for the preservation measures and, therefore, the execution of a development project in any sector (agricultural, fishing, coastal, forestry, etc.) would have a good impact on the economy of the area.

The CAMP impact on the neighborhood: The project is important to the neighborhood due the geographical location of this area as well as to the river which passes through many villages in the Chouf and is the property of Damour municipality.

3.1.4 The Municipality of Jiyeh

Description of the town:

Geographic & Demographic characteristics: The Jiyeh extends on the coast adjacent the area of Damour. Its area is 8 km^2, and has a coast of around 7 km in length, with a gentle slope reaching a height of 230 m at its Eastern edge. The population estimates vary considerably, with the K&A 1994 figures standing at 6,000, while the Ministry of Displaced putting the figure at 2,400. This discrepancy is typical among villages that witnessed significant displacement. To date, 20 percent of the displaced have returned.

Geology & Hydrogeology: The geological formation of Jiyeh is the C4 formation. Therefore, the problem of the underground pollution is severe. In addition, all the local springs are polluted.

Major sectors in the area: The most important activity is in the tourism and the agricultural sector. Agriculture is the main employment sector, although income from this sector has continued to decrease as elsewhere in Lebanon. Roughly half of the lands are used for agriculture, with legumes being the major harvest, and their irrigation being via water wells. However, the marketing of these products pose a problem to the local

inhabitants. In fact, the new highway, the lands for which were expropriated in 1973, has deprived the inhabitants of a lot of commerce since the present highway does not provide easy access to the inner roads, where previously much of the legume production used to be sold.

Jiyeh is today the most popular destination along the coastal strip in the study area for beach goers from Greater Beirut. The local beaches are a significant income generator, with seven of them being licensed. Some of the beaches consist simply of a 50 m^2 concrete terrace by the sea, with other more grandiose constructions (including illegal spread over public land) are also in evidence.

The most significant of the three heritage sites in Jiyeh is the beachside remains of an ancient village, which is a listed site but is completely derilict. Another is the supposed burial place of the prophet Jonas, in addition to a point along the coast where local folklore maintains the whale landed.

There are very few industries in the area. Facilities include a private hospital, two private schools and one public school. One of the private schools includes a secondary school, and plans to establish vocational training as well. There are two agricultural cooperatives as well as two sport/cultural NGOs.

The fishing sector is poor due to the lack of a harbor. While there is a small port that is shared by the Jiyeh power plant (accessible through the military check point extremely difficult); it is only used by around 10 boats serving 20 families.

The status of the municipality: While there was a municipal council prior to the last elections in 1998, there were only three members and so was basically absent. The current council is split evenly between members of two lists, and it is felt that more time is needed for the council to be able to overcome the differences in opinion. But what is more important is the council's feeling of obstacles coming from the central government, mostly due to antiquated laws and procedures.
The annual budget is LL400 m ($270 m). The municipalities have recently rented new premises, and implemented a few projects such as tree planting and street lighting. In addition, it is implementing a twinning project with the Italian city of Dolce Vita, which

is willing to invest up to 40 percent for a tourist project in Jiyeh. The local collaboration of the municipality in the case of the establishment of a new project is felt to be positive. However, this attitude is considered only for the case of a concrete and rapid project.

As to the contacts with the neighborhood, the municipality is having very good and solid contacts with the vicinity. A union of municipalities of Jieh, Jadra, Dibieh, Baasir and Barja is being planned.

The local inhabitants: As mentioned above, only 20 percent of the displaced people have returned. Unlike the Damour area, the displacement of the population was not 100 percent. The Muslim inhabitants have not left the village. They almost form 50 percent of the total population. According to the municipality members, most of the displaced people have left to Australia and their return is not probable. However, local organizations for culture and sports exist. In addition, a cooperative for the farmers is created.

Waste, Sewage System, quarries and major risks: Sewage projects have been frozen, with all houses having cesspits, and the council hopes that a planned sea outlet will be moved further South and connected to a planned treatment plant.

One major problem in the area is a quarry, which while falling in Baasir, still poses problems due to the continuous flow of trucks carrying material out through Jiyeh. The council has an agreement with the quarry owners that provides the council with LL10 m ($6,700) annually, and the quarry also compensates directly on an ad-hoc basis citizens who live along the routes used by the trucks.

The Jiyeh power plant poses a health hazard for the local population, although no epidemic dermatological or respiratory problems have been recorded. The municipality is suffering from illegal dumping of waste including animal offal, and more dangerously of ongoing stealing of sand along deserted beaches.

While there are no significant forests in the area, there were however two fires during the summer of 1998.

The environmental importance of the execution of the CAMP project: This area is estimated to be a good place for the installation of a pilot project for CAMP. This project is important due to the presence of the different resources and sectors as agriculture, fishing, and archaeology. On the other hand, the presence of the important sources of pollution like the central power plant, the fuel harbor and the quarry in the same place is a unique case. This situation is critical due to the lack of a local system for intervention in the case of an environmental accident. In addition, the twinning of the Jiyeh with the Italian village Dolce Vita is an important financial resource for any touristic project that could take place within the CAMP program.

The CAMP impact on the neighborhood: The importance of this project is reflected by the high risk potential in the same town with a lack of any intervention system. Therefore, the gained knowledge, through the development of the CAMP area in Jiyeh, would be useful for all the Lebanese coastal regions, which might encounter the same problem.

3.1.5 The Municipality of Naameh:

Description of the town

Geographic & Demographic characteristics: Naameh falls between Khaldeh and Damour, with a coast of around 4 km and lands stretching inland for just under 4 km. Most of the area is gently sloping reaching a plateau of 250 m, with a further area sloping upwards to the East reaching 440 m. Its population, according to the 1994 K&A study, stood at 7,200, but the municipality provided the figures of 7,500 registered and 26,000 actual inhabitants. As in other cases in this region, the discrepancy is as much due to data credibility as it is to the fact that there was significant displacement during the war. In any case, the council believes that all displaced have returned, although only 15 percent received compensation.

Geology & Hydrogeology: Naameh has the same geological formation as of Damour, whereby the C4 layer is capped by the Chalk and Marly formation of the C6. Although this later formation forms a good isolation for the underground water reservoirs, the drilled wells need to be treated and they might risk salinization, in some places, due to

seawater intrusion. One well of 2 inches only has been rehabilitated by the municipality for water supply purpose.

Major sectors in the village: Naameh had 30 industrial units just a few years ago, but these have dwindled to only three. While very few of the employees were local, the industries, nevertheless, brought in direct income as well benefiting commerce. The closures are due mainly to the economic situation prevalent in Lebanon but also due to Israeli air strikes (while Naameh is not the most frequently hit location in Lebanon, it is the closest to Beirut).

With employment being mostly in the services industry, the public and private sectors, agriculture does not bring in much income, especially as the area produces mostly bananas and legumes, whose prices have been dropped significantly. Naameh's beaches are not used for recreation, and while most of the coast is private, there are a few lots which are public, the largest of which has a frontage of 200 m. The council hopes to get permission to construct a small port, mainly to promote tourism but also to serve the 15 families that use boats for fishing out of other harbors. There are no significant heritage sites other than a non-listed fortress (Tannourine).

The status of the municipality: Naameh is a medium size municipality (under 7 km^2). The council is composed of 15 persons, with two thirds from one list and the remaining from a different list. The council is still trying to ensure that differences between council members are not obstructing the work, with some progress being achieved recently. The council premises are a donation from the church. Its annual budget of LL1,000 m is relatively large as compared to other equally sized municipalities.

Sewage was one of the main problems faced by the municipality after it assumed office in 1998 and it decided to make this a priority. After studying a project executed by the previous council and finding it overpriced, a budget was prepared and confirmed by the relevant authorities. The council then took the unusual step of executing the works independently and without prior approval, for what appears to be a third of the cost. Another significant factor is the council's willingness to contravene central procedures, and that the project included payment by each household for branch connections. There still remain two thirds of the houses with no sewage connection and which instead use

cesspits.

Under two thirds of the houses have no water connections, although the area is rich in water sources. In fact there are 15 wells that take water to the Beirut area, and the council is considering taking legal action in order to benefit the local community. The new council installed a small water network and storage tank but the tank was destroyed during an Israeli air raid and this is being rebuilt by the Higher Relief Committee. The council has also installed another smaller water network with a connection to a well in the upper part of Naameh. The only other project executed by the municipality was stream cleaning.

There is very little public land, and the council is attempting to take over private lands that are designated as green spaces. There is also a 1Million-m2 forest belonging to the Waqf (religious properties) which is used for recreation. A quarry used to exist, but this is currently closed and the council intends to keep it that way.

The council had a very positive attitude for the establishment of a CAMP project in their town. However, they perceived assistance by fulfilling the primary needs as digging new wells and the establishment of water supply network to the whole town. Moreover, they offered a local facility and human participation in the implementation of new projects. According to the members, the relations between the municipality and the neighborhood are considered good. However, no common collaboration is taking place.

The local inhabitants: Four clubs are created in the town. Their activities are culture, sports and social. There is no major collaboration between the municipality and the clubs. However, good contacts are established for any common activity that might take place.

Wastes, Sewage System and Major Risks: Solid waste is collected by Sukleen, and the access road to the regional landfill in Aley passes through Naameh. While the flow of solid waste to the landfill often creates unpleasant smells, the land prices along the road have increased. Given the proximity of the landfill, a private contractor (Sukomi) associated with Sukleen conducts regular checks on water quality.

As mentioned above, the lack of sewage system is causing a major problem. Currently 70 percent of the houses area are still deprived from a sewage collection network. As to the

major risks, they are essentially related to the Israeli bombardments, the presence of the industries near the houses and the new highway with no walking passageway.

The environmental importance of the execution of the CAMP project: The execution of the CAMP project in the region of Naameh is suitable for more than one major sectors. However, and depending on the type of the project, the conflictual situation between the members of the municipality could be a constraint. Moreover, the impact of creating a CAMP project in the Naameh village will have a clear impact on the environmental management strategy. This is true for the agriculture sector and the coastal area. Nevertheless, with the small number of people working in the agriculture sector the economic status of the area could be hardly ameliorated in order to assure a continuity of the village development. The same case is for other sectors as for fishery and industry.

The CAMP impact on the neighborhood: A good environmental management of the multi-sectorial issues in the area of Naameh would have a beneficial impact on the neighboring villages.

3.1.6 The Municipality of Saida:

Description of the city

Geographic & Demographic characteristics: Saida is the largest city in the CAMP study area, and the third largest in Lebanon. It is located on the coast. Its area is a relatively small 7 km^2. Its population estimate for 1994 (K&A) was 52,000, although as a regional center its services clearly cater for a much larger population.

Geology & Hydrogeology: The geological formation of the area is the recent Quaternary deposit, which is overlying the eocene and the cenomanian formation. The sea water intrusion is a major source of groundwater contamination.

Major sectors in the area: The city has the largest concentration of industries (103 according to the Ministry of Industry survey), although they do not seem to be as polluting (with the exception of tanneries) as those in the municipality of Ghazieh to the

South. A number of industries are artisanal and have high tourist potential, such as boat building, crafts, and wood work, with a number of them located within the old city.

While most of the city's inhabitants earn their income from commerce, tourism has a large potential. There are many ruins, including the sea castle, the Khan, Ashmoun, Salaheddine palace, and others. More importantly, have been many projects to rehabilitate most of these structures along with the promotion of festivals and other cultural events. In addition, lobbying has been underway for a number of years to obtain listing for Saida as a World Heritage Site. It is expected that Saida will be listed during the Conference of Mexico in October 1999. The old city itself has a sister city agreement with Lyons, and this will be focused on rehabilitating the city while ensuring that its mix of inhabitants and income generating activities remain. The city is naturally dense, and yet there still remain tracts of land that have been reserved for agriculture.

The status of the municipality: Being such a large city, a municipal council had been in operation prior to the last elections, with its current council being all but one from a single list. Its annual budget is LL 6,000 m ($4m), a lot of which goes to employees. As in most of the public sector, the average age of employees is close to 55, with a very flat pyramid. The council feels that it has too many employees of low skills and too few of middle to upper management (for example no city engineer). This group of 240 employees is taking a big portion of the municipality budget. On the other hand, there is a lack in the administration personnel, whereby 11 out of 24 are present.

Being such a large city, and one that has received considerable attention during the last years from a few private organizations (notably the Hariri Foundation), a number of projects have been established and more are underway. Among the most prominent are the sport arena and the renovation of the old city. In addition, a two-hectare plot has been set aside for a public garden and a planned public library is underway. Other plans are in their way to limit the current impact of bad odors of the landfill.

As to the collaboration with the neighborhood, there is an informal union of municipalities (grouping Saida, Hilaliya, Abra, Majedelyoun, Ghazieh, Haret Saida, Maghdouche, and Darb El Sim) which varies depending on the services. For the most part, this union consists of Saida providing a solid waste dump and maintenance of

infrastructure for which it bills the relevant municipality.

The local inhabitants: With the availability of numerous public and private schools, the level of educated people in the city of Saida is high. A number of NGO's exist in the city, and the council also meets with most of them on the first Monday of every month. The council is trying to increase awareness, and is doing so in a sectoral fashion. One such example is a contract drawn between the council and seven NGOs to maintain the public beach.

Waste, Sewage System and Major Risks: One of the major problems in the city is the landfill on the coast. The council is also studying offers for a solid waste plant. The studied project is a BOT for sorting and composting. A sewage system network is present in the city. However, it is discharging directly to the sea. Furthermore, and while the national plan calls for the building of a primary treatment plant with a sea out-fall, the council is trying to modify this to a secondary treatment plant (Japanese funding through CDR) due to their belief that this would be cheaper (no sea out-fall) and provide side benefits (landscape irrigation).

The environmental importance of the execution of the CAMP project: As mentioned above, important projects are taking place in the area, and major associations are offering assistance (as Hariri Foundation). Furthermore, if classified among the list of the World Heritage, Saida will have the opportunity to receive additional support. However it was obvious that the City represented by its municipal council is in need for guidance, technical assistance and capacity building in issues relevant to industrial management (they requested assistance on cleaner production for instance).

As for the status of the municipality, it was noted during the interview that the management strategy, as well as the level of awareness of the members are at an advanced stage, when compared to other municipalities.

The CAMP impact on the neighborhood: Being the center of a union which is composed of 7 other municipalities, an implementation of a project in the city of Saida should have an impact on the neighborhood. However, this situation is dependent on the type of the project executed and on the change it had brought to the city itself.

3.1.7 The Municipality of Sarafand:

Description of the town:

Geographic & Demographic characteristics: Sarafand is a coastal village that lies midway between Saida and Sour and was well known for its fish restaurants. Its topography is relatively gentle, with altitudes reaching 180 meters. Its area is just under 10 km^2, with a 1994 estimated population (K&A) of 6,800, while the municipality estimates the population at 17,000, not including some refugees from the Southern occupied strip.

Geology & Hydrogeology: With the geological formation of the hills of Sarafand, the water from the artesian wells could be reached at 300 m deep. As to most coastal region, the sea water intrusion is the major cause of the groundwater pollution. This is possible without any salinity of the water. The coast of Sarafand is of a sandy bay type with shallow sea. The sand of the coast has been taken during the war.

Major sectors in the town: Prior to the war, small-scale touristic activities were significant, at least in the sense that few coastal villages in the area had any such activities, and the village was also listed as a touristic zone. However, agriculture was the main economic activity then. Today agriculture is still a main activity, probably occupying around 25 percent of the land. Citrus, legumes, and bananas are the main products, but like in other areas, revenues are dropping dangerously low, mostly due the perceived lack or problem-ridden agricultural policy.

Another main activity is fishing, with 180 boats serving 500 fishermen representing a substantial component of local job sources as well as the overall fishing industry in the South as a whole. A small fishing port exists for this purpose. The industrial sector is weak, with only a handful of units to be found. General commerce as well as some public sector jobs represent the remaining job providers.

The status of the municipality: The municipal council is composed mostly of members of two lists, with around two thirds being from a single list, while four members from a local cultural and sport community group.

Its annual budget is in the order of LL 400 m. The municipal council has completed a number of projects, the most noteworthy being the planting of trees (in one case with assistance of Green Plan and in another by itself), upgrading or expansion of sewage systems, and construction of a water tank (Council of the South). There is a large tract of land measuring almost half a square kilometer which is owned by the government and which the municipality intends to acquire. However, around 30 percent of this land has been built on illegally.

The attitude of the local authority for the establishment of the CAMP project in their town was very positive. The remarkable thing during the visit was the presence of all the members of the municipality. In addition, the meeting was held in the premises of the sport club, Club El Nijmeh, with the presence of the members of this club. The council explained their strategy of work, which consists of taking the opinion of the engineers of the club and consequently asking them to execute the local projects. They all agreed on their collaboration for the execution of the CAMP in their town.

The relation of the municipality with the neighborhood is marginal and this is due to the lack of mutual interests.

The local inhabitants: It appears that the Sarafand inhabitants are relatively active; this may be explained by the fact that they rarely leave or emigrate. The Nijmeh Sports and Cultural Club has been operating for many years, and appears to be quite active, as demonstrated by its presence in the municipal council and by its promotion of social projects. In addition, local fishermen belong to a cooperative that falls under the Fishing Syndicate of Sour.

Waste, Water Supply, Sewage System and other problems: The municipality collects solid waste and dumps it in a local dump that has existed for a number of years, but no treatment is conducted. One major problem is water supply, with most wells being polluted. The majority (70-80%) of the houses area connected to sewers, which all feed by gravity through streams or trenches towards the sea without any treatment. Other problems consist of the lack of any high school, no telephones or postal system. As in most other villages, illegal construction and facilities along the immediate coastal area are present.

The environmental importance of the execution of the CAMP project: Among the eight visited municipalities in the CAMP area, the Sarafand appeared to have very interesting characteristics on the level of the available natural and human resources. In addition, the historical importance of the village is a good incentive for the preservation and the management of this area.

The execution of the CAMP project in the area of Sarafand would have a good impact due to the availability of a good economic tool, the fishing sector. In fact, the high number of fishermen and their current low economic status is a problem that could be treated during the implementation of the project. In addition, the good educated level of the members of the municipality and the club is an important human resource, which support a program of capacity building, in order to maintain a sustainable development for the area.

The most interesting environmental achievement in the case of implementation of the project would be stopping the reclamation of the sand in the bay area. This location is compatible for the execution of suitable measures.

The CAMP impact on the neighborhood: The execution of a CAMP project in this area would be beneficial in transmitting the new management strategy and economic tool to the neighboring villages and towns which have the same geographical and socio-economic conditions.

3.1.8 The Municipality of Schim

Description of the town:

Geographic & Demographic characteristics: Schim is situated on the hilly mountains of the CAMP area with no site exposure to the sea. The area is 6.54 km^2. The population number is 15,900 with very high density per km^2 due to the lack of land.

Geology & Hydrogeology: Schim falls on the C4 geological formation. Therefore, above the same water reservoirs and with no filtration or isolation layers. Therefore, the

pollution of the underground water in this village is very high.

Major sectors in the area: Most of the inhabitants work in the public sector. On the other hand, Schim have a high number of educated people working in the private sector as doctors, engineers, etc. The agricultural sector is almost absent due to the lack of available land.

In fact, the dominant issue for which the village of Schim was chosen among the primary screening of the municipalities of the CAMP area is the urban planning. The dense building structures lack in some places the presence of roads and basic infrastructure. Added to this, the increase of population is making an important issue for the municiplaity to ask for permits of additional floors per buildings. Otherwise the children are obliged to leave the village for new homes. This problem also has resulted in the absence of any public area inside the village. The municipality is trying to rehabilitate a small place in front of a mosque for the gatherings of the village inhabitants.

The town possesses an important archaeological site at the periphery. However, this site is not well known and exposed to the touristic sector. On the other hand, the complementary facilities (like restaurants etc.) are absent.

The status of the municipality: Most of the municipality members are educated and young people. They belong to different political movements. However, the decision making inside the municipal council is done in a very democratic way. No major conflicts are noted on the level of the development of the village. The budget of the municipality is 700 millions per year. Like all other municipalities, this budget is under the control of the government and any decision concerning the release of money would take a huge bureaucratic procedure. This main restriction is limiting the activities of the municipality. However the projects taking place currently in the village are the digital mapping project done with LIFE, a UNDP project. Another project is taking place to study the traffic. The municipality is also working on unifying the colors of the buildings. The planned projects that need the acceptance of the government to be done are the public place and the parking and stores project. In addition, the management of the rainwater is one of the planned projects especially in the areas of dense population where the water is flowing inside households due to the absence of drainage pipes. The municipality is also working

for the execution of new roads inside the village. A sewage treatment plant is among the planned projects also, whereby a BOT project with a German company is under study.
The president of the municipality was positive concerning the execution of a development project in his village. Therefore, he offered all possible collaboration including local facilities and the help of the inhabitants. However, and like the case with other municipalities, the expectation of the external assistance is always seen as an infrastructure project taking place rapidly. The municipality has a good contact with the neighborhood without any practical collaboration in any project or in a common strategical view for the area.

The local inhabitants: As mentioned before, the village possesses a high number of educated people in all the domains. The cultural and sportive organizations are numerous. In addition an Islamic and a women organization exist in the village. The municipality members described the local organizations as being very active and collaborative with the local authority.

Waste, Sewage System: Waste is collected by the private company Sukleen. Even though the sewage collection network exists, it is not treated and is disposed of in the nearby valley of the village. The water supply to the village is from the Barouk unit. Therefore, the wells are rare and private.

The environmental importance of the execution of the CAMP project: It is evident from the available data that the village is in a very critical situation and needs a strategic orientation for an environmental management and a future development. However, with the lack of basic resources, (which is the land in this case) solving the problem appears impossible. The only seen way for resolving this urban situation is through the collaboration with the surrounding villages for the development of a common urban plan including all the facilities and infrastructure.

The execution of the CAMP project in this village would help in orienting the municipality members towards a better understanding of the environmental conditions. Therefore, working on the capacity building inside the municipality would be helpful. However, the available resources and conditions do not present a suitable situation for the execution of the CAMP.

The CAMP impact on the neighborhood: The surrounding villages almost having the same problems as the town of Scheem. Therefore, a successful project in the town will be favorable for its surroundings.

3.2 Criteria for the selection of CAMP areas

The basic criterion in choosing the three spot areas is the presence of a major economic sector in the selected municipality. Moreover, the status and the value of the resources relative to the major activity in the municipality are important to assure a sustainable development plan. The presence of a secondary activity and its equivalent resources form an additional input to the project and promote the application of intra-sectorial solutions and management plans in the pilot project. In addition, the public zones belonging to the selected municipality are also considered especially in the case of a touristic spot. For the establishment of CAMP in the areas classified as industrial or agricultural, the size of the local habitants working in this sector is considered. Furthermore, the impact caused by these sectors on the environment and the possibility of the application of an economic tool that can reduce this impact is an important criterion for the establishment of CAMP in the studied spot.

On the human resource level, the status of the municipality is taken into consideration. Whereby the level of awareness, the decision-making and the autonomous behavior are studied. In addition, the municipality is evaluated based on its objectives, achievements, strategies and neighborhood contacts. The second type of human resource is the local inhabitants, their social activities and their collaboration with the local authorities.

The conditions of applying the pilot project in the municipalities depend also on the need of the city/ town to the CAMP project and the level of its impact on the neighborhood as being a pilot project. This need is evaluated in terms of size of the local capacity versus the size of the budget that CAMP is planning for (taking into consideration the restricted budgets of all the municipalities). Added to this, is the impact of the development programs and capacity building of CAMP in the selected site; also, the degree of collaboration that the local authority is planning to work with including the value of the input that this municipality is ready to offer (local facilities, financial and human

contribution, etc.).

Parameters & Criteria

First Parameter: The Major Sectors of the Town

- The dominant economic sector in the town (or group of villages).
- The percentage of people involved in this sector.
- The available resources for this sector (human and financial resources).
- The presence and status of the secondary activity.
- The environmental impact of the local activities.
- The capacity of application of an economic tool that can preserve the environmental well-being.

Second Parameter: The Status of the Municipality

- The local institutional capacities.
- The level of harmony in the decision making between the municipality members.
- The type and value of local collaboration/ contribution.
- The contacts and the collaboration with the neighborhood.
- Degrees and measures of future collaboration.

Third Parameter: The local Inhabitants

- The degree of collaboration of the local associations with the municipality.
- The young people living in the village.

Fourth Parameter: The General Conditions of the Town

- The importance (or the impact) of the execution of the CAMP in the town, especially in terms of human development that could assure a continuity of the project.
- The environmental impact of the execution of the CAMP in the area.
- The importance (or the impact) of the execution of the CAMP with respect to the surrounding neighborhood.

Fifth Parameter: The CAMP Conditions

- The agreement of the national and local authorities on the implementation of the project
- The possibility of executing a two years and a half project plan, (after this period the

project is supposed to be handled by the national and local authorities)
- Promoting a sustainable development and a rational use of the resources in the area.

3.3 Selection and Justification

In this section, the conditions in each municipality are given along with recommendations on whether or not the site is suitable for implementation of CAMP projects. The project team, after the selection of eight localities, narrowed down the final selection producing strong recommendations for three with a fourth being a runner up. The three selected municipalities are Damour, Jiyeh, and Sarafand.

3.3.1 Selected Municipalities

Municipality of Damour

The execution of the CAMP project in Damour would have a very positive impact on the village itself as well as on the region. This is expected due to the following reasons:

- The available assets including agricultural areas, forests, rivers, sandy beaches and marines resources;
- The institutional capacity and incentives;
- Strong leadership qualities;
- The strategic geographical location of the village, being on the coast and the beginning of the Chouf mountain area and the South of Lebanon;
- The actual conditions form an ideal situation for the preservation measures and therefore, the execution of a development project in any sector (agricultural, fishing, coastal, forestry..) would have a good impact on the economy of the area;
- The importance of the project to the neighborhood due the geographical location of this area as well as to the Damour River which passes through many villages in the Chouf and, which is the property of Damour municipality.

	Ain Ksour, Aramoun & Basatin	Borj El-Shimali	Damour	Jiyeh	Naameh	Saida	Sarafand	Sheem
Dominant activity	Agriculture and camping resorts	Agricultural and industrial	Agricultural and touristic	Agricultural and touristic	Agricultural and industrial	Industrial and touristical	Industrial, fishing and tourism	Urban
Type and value of local collaboration	Offering facilities and active cooperation	Offered facility	Very strong collaboration	Offered facility and local collaboration	Offered facility and human collaboration	Offered facility and human collaboration	Offered facility and human collaboration	Offered facility and human collaboration
Institutional capacity	Educated and harmonious municipal council	Limited due to internal conflicts	Educated, autonomous Possess high initiative	Majority of educated staff Internal conflicts	Mixture of educated and illiterate members creating internal conflict	Educated members and active clubs/ NGOs	Educated members and active clubs/ NGOs	Educated and active members
Volunteer participation	Local inhabitants	Local inhabitants	Local inhabitants	Local inhabitants	Local inhabitants	Local inhabitants and NGOs	Local inhabitants and social clubs	Local inhabitants
Actual capacities	Human collaboration of the council and local inhabitant	Human collaboration	Human collaboration Strong international contacts	Human collaboration Italian assistance in a tourism project	Human collaboration of the council	Positive attitude. Potential collaboration with NGOs	Staff council and sport clubs collaboration	Staff council and NGOs collaboration
Resources	Forests Agriculture	Absent	Forests Coast and agriculture	Agricultural Areas, archaeological sites (not managed), coast	Agriculture Coast	Archaeological sites Fishery	Coast Agriculture Fishery undigged Archaeology	Archaeological site
Contacts and collaboration with the neighborhood	Very solid collaboration	Little contact	Good contacts	Very good contact and collaboration	Little contacts	Formed an alliation with the neighborhood	Good contacts	Good contacts

	Ain Ksour, Aramoun & Basatin	Borj El-Shimali	Damour	Jiyeh	Naameh	Saida	Sarafand	Sheem
Degrees and measures of future participation	Showed a positive initiative for all possible participation	Showed a positive initiative	Distinguished attitude of cooperation	Showed a positive initiative for human collaboration	Showed positive initiative for possible participation	Showed positive attitude	Showed positive initiative for human collaboration	Showed positive attitude
Existing problems perceived by the community	- Sewage system; - Mines; - Lack of database	- Sewage system; - Illegal houses	- Waste dumping on the shore; - Lack of sewage treatment unit	- Nearby quarry; - Central power unit; - Fuel port	- Water supply; - Swage network	- The dumping site on the coast	- Sewage system; - Water quality; - Level of living of farmers and fishermen	- Space for additional buildings; - Water availability; - Sewage treatment unit
Important zones (natural, historical, etc.)	Natural forest area	NA	- Natural areas - 10 kms of sandy beaches	- Archaeological sites - Sandy beaches	Gravel beach	Archaeological sites	Sandy beaches	Archaeological sites
Industrial sector and % of local workers	NA	NA	NA	Central power nearby the sea	Present with a negligible number of local workers	Present with a marginal number of local workers	Negligible presence except for the small stores for car repairs, etc.	NA
Agricultural sector and % of local workers	~ 25% of the total land	Non significant	400 ha	789 ha		Non significant	25%	Non significant
Residential zones	~ 50%	Dominant	30%	30%	30%	dominant	50%	Non significant
Touristic sector	~ 20%	NA	20%	10%	15%	The sea boulevard and the old souk	The coast	The archaeological site

	Ain Ksour, Aramoun & Basatin	Borj El-Shimali	Damour	Jiyeh	Naameh	Saida	Sarafand	Sheem
Important infrastructure (refinery, irrigation system)	NA	NA	- 16 kms irrigation system; - Sewage collection pipe	- Power unit; - Fuel port	NA	Sewage collection pipes	NA	Sewage collection pipes
Public regions	Most of touristic zones	1000 ha under the jurisdiction of the Ministry of Finance	Most of the touristic region	Sandy beach	Gravel beach	Sandy beach	Sandy beach	Absent
Water resources								
Surface water	NA	NA	Damour River	Winter river	NA	Awali River	NA	NA
Underground water	The C4 Reservoir	The C4 and the e2b reservoirs	The C4 reservoir capped with a protection layer of C6 formation	The C4 and C5 reservoir	The C4 reservoir capped with a protection layer of C6 formation	2eb and C4 reservoir	2eb and C4 reservoir	The C4 reservoir
Marine resources	NA	NA	Present	Present	Present	Present	Present	NA
Air pollution	Due to traffic	Due to traffic	Due to traffic	Due to the quarry	Due to traffic Smells form neighboring landfill	Due to traffic and odors form the dumping site	Due to traffic	Due to traffic
Water pollution	All springs		Surface water	Underground and coastal waters	Polluted underground	Polluted sea and river	Polluted from sewage disposal	Water supply is controlled by Barouk water Service

	Ain Ksour, Aramoun & Basatin	Borj El-Shemali	Damour	Jiyeh	Naameh	Saida	Sarafand	Sheem
Waste	NA	NA	Hazardous dumping	Hazardous dumping	NA	The dumping site	Uncontrolled landfills	NA
Economical instruments for reducing the impact on environment	Create income generating projects	Create union between neighborhood to increase natural resources	Exploit through a sustainable system the natural resources	Managing the agricultural sector	Infrastructure	Waste management	Exploit resources through a sustainable system	Initiation union with the neighborhood to create common green areas
Major risks	Mines		Forest fires	Power unit	Israeli bombardments	Sea pollution and fishermen security	Sea pollution and fishermen security	Crowded and unreached areas

Municipality of Sarafand

Among the eight short-listed municipalities in the CAMP area, Sarafand appeared to have very interesting characteristics on the level of the available natural and human resources. In addition, the historical importance of the village is a good incentive for the preservation and the management of this area. On the other hand, the severity of environmental problems such as waste water discharges into the sea with no prior treatment, and the proximity of residences to these effluents discharge points and their health risks, and the hasty conservation of maritime public domains are issues determining to prioritize Sarafand among the three selected municipalities.

The execution of the CAMP project in the area of Sarafand would have a good impact due to the availability of a good economic tool, namely the fishing sector. In fact, the high number of fishermen and their current low economic status is a problem that could be treated during the implementation of the project. In addition, the good educational level of the members of the municipality and the leading NGO's (sport and culture club) is an important human resource, which supports a program of capacity building in order to maintain a sustainable development for the area.

The most interesting environmental achievement in the case of the implementation of the project would be the reclamation of the sand in the bay area. This location is compatible with the execution of suitable measures.

Municipality of Saida

Being the largest city in CAMP-Lebanon area and the center of a union that is composed of seven other municipalities, the implementation of CAMP in Saida would have a good impact on the surrounding area. The variety of problematic and issues pertinent to environment (industrial, touristic, waste management, etc.) makes of the city a good example to be followed by similar big cities. Moreover, and despite the presence of an active municipal council, a need was observed to build and provide the council with the necessary technical assistance and capacity building.

3.3.2 Runner Up Municipalities

Aramoun, Bsatine, and Ain Ksour

As mentioned earlier in the description of these municipalities, the area is a good representation of most Lebanese villages, in that they have suffered from the lack of assistance and infrastructure development. Like other regions also, these three villages are lead by local authorities that appear aware and optimistic and who are willing to build and develop the region. There are a number of advantages to choosing this group of municipalities to be one of the CAMP sites, and these are:

- The high level of awareness of the municipality members, but who are in need of a strategic and organizational guidance as well as environmental and economic orientation.
- The special case of the exploitation of the underground water reservoir.
- The lack of incoming resources of the municipalities.
- The existence of the natural areas that are owned by the municipalities.
- The beautiful sea views of these areas.
- A pilot project in this area would give a good impact to the neighborhood and the visitors due to its nearby location to very dense agglomerations.

Therefore, a CAMP project in this area would have an important impact on the perception of the local authorities and the public at large of the idea of environmental conservation combined with an increase in economic resources. This could be done through the development of an eco-tourism plan for the natural areas.

Municipality of Chhim

It is evident from the available data that the village is in a very critical situation and needs strategic orientation and management of the future development. However, with the lack of basic resources (which in this case is both public land and vacant private land in the village center), solving the problem appears impossible. The only apparent way for resolving this urban situation is through the collaboration with the surrounding villages for the development of a common urban plan including all the facilities and infrastructure.

The execution of the CAMP project in this village could help in orienting the municipality members towards a better understanding of the environmental conditions. Therefore, working on the capacity building inside the municipality would be helpful. However, the available resources and conditions do not present a suitable situation for the execution of the CAMP.

Section Four

CAMP-Lebanon proposed activities

Based on what has been presented in the previous sections, it appears of primary importance to design an "added-value" programme that would focus on a "bottom-up" approach, through involving the active concerned stakeholders and building their capacity in order to carry out the proposed activities. The main objectives of CAMP-Lebanon are:

1. To introduce and integrate the concept of sustainable development of coastal resources in the activities of local communities.
2. To determine environmental development problems in CAMP-Lebanon and suggest adequate remedial measures.
3. To involve concerned stakeholders (local, national, regional and international) in the decision-making process of the sustainable development mechanism.
4. To build the capacity of concerned stakeholders by proposing a programme of short-, medium, and long term activities.
5. To identify sources of funding necessary to implement short- and long-term development activities.

CAMP- Lebanon benefits are:

1. To contribute to the improvement of the coastal environmental conditions on the national and local level;
2. To establish a national coordinating/ consultative body for coastal zone management;
3. To increase public awareness and involvement in major environmental issues;
4. To establish grassroots for sound environmental policies to be integrated within the development and planning activities, as well as the decision making process on the municipality level;
5. To provide national expertise with adequate skills needed to solve encountered environmental problems during the development process.

Some of the suggested CAMP outputs would be:

1. To introduce Local Agenda and MAP concept in three selected municipalities;

2. To develop integrated management plans on municipality level;
3. To provide capacity building and technical assistance programmes for decision-makers and concerned stakeholders;
4. Establish a national committee for coastal zone management;
5. To enforce Barcelona Convention implementation;
6. To develop environmental awareness programmes;
7. To establish a database relevant to the area to be covered by CAMP- Lebanon;
8. To identify fundraising sources necessary to conduct activities within CAMP-Lebanon.

The use of CAMP-Lebanon results at MAP level could be foreseen in using:

1. Results and experiences of CAMP-Lebanon project, applicable at the MAP level (policies, strategies, procedures, methodologies).
2. Lessons learned to be taken into account at the Programme level;
3. Results and experiences to be recommended as pilot ones for solving similar problems in the region.
4. Project results to be analyzed and used by the Mediterranean Commission for Sustainable Development.

CAMP Lebanon organization

As MAP will directly manage the activities, the project will be co-managed by the Ministry of Environment. On the local level, the agreement will be signed with each of the selected municipality, through the intermediary of the Minister of Environment.

- Under MAP/MEDU coordination, a MAP expert (or a project coordinator) will manage the CAMP-Lebanon, from the CAMP office to be located in the premises of MoE. Paid by MAP and directly supervised by MAP and MoE, his/ her tasks include, among other:
    - Coordinating the overall CAMP Programme;
    - Supervising the implementation of suggested activities in the selected municipalities;
    - Assisting MoE, MoT and CDR in issues relevant to coastal zone management (technical, legislative and administrative).

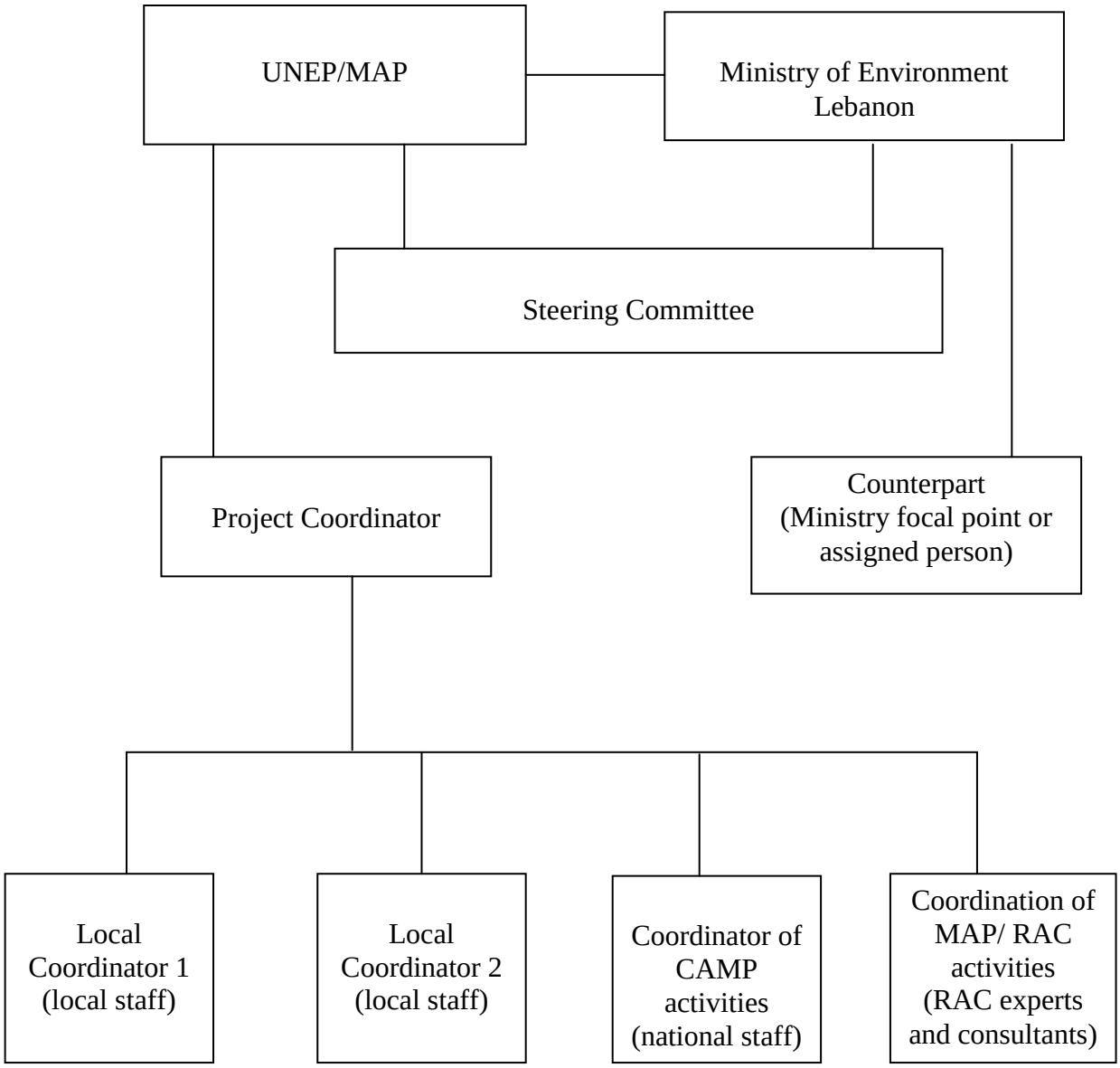
MAP expert will be dealing directly with the three Local Agendas 21 Specialist hosted in each of the three municipalities.

- Local coordinators (or Local Agenda Specialists): These are preferably local individuals or NGOs to be employed as an in-kind contribution, and hired by MAP as consultants for specific thematic activities.

- Ad-hoc consultants (preferably local/ national) as required complementing national/ local and RACs experts.

CAMP Lebanon

Organizational Structure



Description of suggested CAMP- Lebanon activities

Since each of the three selected municipalities possesses different assets, the formulation of activities will be suggested according to the priorities set by the municipality itself.

On the governmental level, the establishment of a national steering committee headed by the Ministry of Environment and including decision makers representatives of ministries, national and international institutions, as well as NGOs is a first step towards introducing a sound concept of coastal management. This steering committee will follow-up legislative matter pertaining to coastal zone issues, supervise the activities and achievements to be made by the projects, and ensure that these activities are conducted along with the national priorities.

On the other hand, and although the sustainable development concept is quite new in Lebanon, the establishment of a Local Agenda 21 in each of the selected municipalities would enforce and strengthen the implementation and follow-up of the activities on the local level. The use of the previous experience of LA21- Lebanon could facilitate the interaction and the understanding of the various concepts with the concerned municipalities.

The following table summarizes the type of activities that would be carried out. These activities would be eventually elaborated once approved.

Activity	Damour	Saida	Sarafand
Implementation of Local Agenda 21: - Introduction of Local Agenda 21 and MAP concept to local community - Promote and increase the local community participation into the LA 21 process (periodical meetings, conferences, seminars, exhibitions, international for a, etc.). - Establishment of a LA 21 steering committee - Manage and supervise MAP activities and research studies related to coastal resources - Preparation of a local Agenda 21 Plan that would integrate environmental strategies into the municipal development plan (based on the studies conducted by MAP) - Provide means/ procedures to sustain the role of LA21/ MAP within the municipality after the completion of CAMP-Lebanon project	x	x	x
Sectoral activities	**Damour**	**Saida**	**Sarafand**
Water resources management: - Assessment of the status of coastal water, including monitoring of pollution sources and levels, bathing water conditions, drinking water conditions - Coastal erosion assessment - Conservation management plan	x	x	x
Damour River basin management: - Water surface monitoring - In-depth study of upstream pollution sources - Formulation of a river basin management plan	x		
Forest management: - Biodiversity assessment - Classification of areas affected by vegetation cover reduction/ loss, to be reforested - Forest fire risk assessment - Management plan	x		x

- Reforestation campaign - Capacity building			
Coastal management plan: - Review urban master plan to integrate environmental considerations - Establishment of an integrated coastal management plan	x	x	x
Tourism sector: - Ecotourism management plan - Promote and assist private tourism resorts (beaches, restaurants, etc.) in adopting national standards to reduce/ prevent water and waste pollution levels - Integrate archaeological sites into the environmental management plan	 x x	 x x x	 x x
Air pollution monitoring: - Assess air pollution sources	x	x	x
Solid waste management: - Strengthen municipal capacity in monitoring impact of solid waste on marine resources - Conduct local sorting and composting programme	x x	x x	x x
Fishing resources management: - Socio-economic and environmental impact - Marine ecology and biodiversity assessment - Impact of fishing techniques on water quality and marine resources - Fishing habitats amelioration		x	x
Environmental database (maps, surveys, etc.)	x	x	x
Data management- GIS	x	x	x
Assistance in the identification of fund resources: - Establishing contacts; - Preparation and submission of proposals	x x	x x	x x
Monitoring, evaluation and reporting	x	x	x

Training programme:

Institutional and professional upgrading of national and local capacities, the introduction and application of methodologies, tools and procedures for sustainable coastal management are among the major CAMP objectives. Therefore, building the capacities is essential as a priority activity. Various forms of training will be applied, such as training courses, seminars, workshops and on-the-job (OJT) training.

An initial training on project objectives, activities, institutional arrangements and implementation procedures should be organized after the signature of the CAMP-Lebanon Project Agreement.

Capacity building programmes are mainly in the form of training courses on aspects related to:

- coastal zone management regulations and legislation;
- coastal resources management;
- public-private partnership in environmental issues;
- information use;
- fundraising, etc.

Continuous environmental awareness activities will be also conducted in parallel all along the implementation of the project, in issues pertaining to solid waste management, reforestation, ecotourism, integrated pest management as well as other issues considered relevant to both CAMP and the concerned municipality during the implementation of the project. Local experts and NGOs are the main stakeholders involved in providing these programmes and activities seminars.

Post project activities

In order to secure the implementation of solutions proposed by the CAMP-Lebanon project and of the follow-up proposals, some of the activities to be implemented after the completion of the project should include:

- formulating and implementing a follow-up programme of activities at national and municipal level;
- monitoring the use of project results;

- evaluating the monitoring results;
- reporting on the use and monitoring of project results;
- using the project results at the Programme level and at the MAP level.

The formulation of the follow-up programme activities, monitoring, evaluation and reporting have to be implemented by the Ministry of Environment, as part of the obligations defined by the Project Agreement.

MAP role in the follow-up activities will be related to:
- monitoring and reporting to the Contracting Parties;
- Providing assistance and cooperation in formulating relevant national and local action plans, and/or remedial programmes, as well as applying for international funding or for international support.
- Assisting and cooperating when applying recommendations toward sustainability.

A more active MAP involvement could be undertaken in accordance with the needs of and request from the Ministry of Environment.

CAMP-Lebanon financial procedures

The collaboration for the execution of the CAMP project will be on three levels: The local or municipal level, the national level represented by the Ministry of Environment and the external assistance represented by the MAP. The contribution of these sources will be either in cash or in kind.

The local contribution (municipalities) is mainly in kind and in cash. Indeed all municipalities offered local accommodations for the establishment of the CAMP project in their areas. The offered facilities are all in the premises of the municipal building. This includes the office, electricity, phone and fax.

The host country contributes “in kind” and cash to the implementation of the project, as envisaged by the Project Agreement. In this regard, the Ministry of Environment is still required to identify its contribution in the implementation of CAMP-Lebanon.

Other agencies and institutions participating in, or contributing to the project, will define the relevant financial procedures to be applied within their involvement.

Supply of equipment within CAMP project is in principle limited to special cases and with modest expenditures to incur. In most cases, this type of assistance is limited to PC level hardware and specialized software, or to minor special non-expendable equipment. The procedure related to supply of equipment includes, among other, the assistance or training on its use, if needed.

As stated in the operational manual on the formulation and implementation of CAMP Projects (MAP- PAP/RAC, 1999), the following financial procedures are to be taken into consideration:

- The MED Unit function is related to the timely disbursement of funds, and to the general supervision and control of all financial procedures and expenditures incurred, in accordance with the relevant decision of the Contracting Parties and the Project Agreement;
- PAP/RAC as the Centre responsible for the implementation of the Programme and of the individual projects, will regularly inform MED Unit on aspects related to funding or expenditure problems, if any;
- All Regional Activity Centre involved in the project, implementing activities as envisaged by the Project Agreement and the Inception Report, will sign respective Memorandum of Understanding with the MED Unit, related to funding, expenditures and reporting on them.

The basic financial procedure related to the implementation of the project and of its individual activities will use the standard MAP/UNEP budget structure, and standard formats of Financial Statements of Accounts and of Cash Advance requirements.

Appendix A: List of laws relevant to coastal zone management in Lebanon

(Reference: Regional Environmental Assessment Report on the Coastal Zone of Lebanon- CDR- 1997).

Appendix B: Maps

Appendix C: Rivers declared under Protection

Appendix D Survey of Existing Information

Demographics

There are two demographic data sets used in this study. One is the data provided by the town and village GIS data from Khatib & Alami (generated for their Lebanon Staged WasteWater Plan) while the other is a database for municipalities from the Ministry of Municipal and Rural Affairs. The problems of availability and/or accuracy of demographic data are well known. These can be illustrated by comparing the two data sets used in this study. This was done by aggregating the population figures in the town and village dataset by municipality. Then, two rankings were performed; one based on the K&A data, and the other on the MOMRA data. Finally, a checking indicator was added which was the subtraction of one indicator from the other. Given that the number of municipalities and mokhtar councils is 180, this indicator should vary between 180 and -180, while the ideal value would be zero. Actually it varied between 112 and -136. Those records for which the indicator was greater or equal to 40 or less than or equal to -40 were investigated; there were 29 and 30 in each category respectively.

Out of those which were greater than or equal to 40, the problem with all but six of them was that they were areas along the Eastern edge of the study area; and consequently were not complete since they had been truncated. Upon further investigation, it was found that their main villages were not within the area and so the village population (K&A figures) had not been captured. Out of the remaining six cases, no reason other than problems of source data integrity could be found, and they were left as are. They are: Adloun, Arzi, Insariyeh, Kraye, Majdelyoun, and Tafahta.

Out of those that were less than or equal to -40, all but eight were most likely the result of problems of source data integrity. For the remaining eight, two reasonable explanations could be found: significant refugee problems during the civil war (Aytat, Bkechtaine, Chemlan, Damour, Debbiyeh, and Souk el Gharb) and the presence of Palestinian refugee camps which are sometimes not included in surveys (Darb Al Sim, and Miyeh We Miyeh).

Towns and Villages

An essential GIS data set has been produced by Khatib & Alami as part of its work for the Ministry of Environment in 1993 for the Lebanon Staged Wastewater Plan Study. The towns and villages were digitized as points from the 1:100,000 Army maps dated 1963 which are in the Lambert Conformic Conic projection. Khatib & Alami added demographic data which were generated by combining data from three different sources and then further refining them by checking obvious discrepancies (such as due to refugee movements) and comparing it to electrical subscriber data. The 1994 sample survey conducted by the Ministry of Social Affairs arrived at figures which were within 5 percent (for the total) although local variations were greater in certain cases. The Dar Al Handasah Industrial Waste Master Plan (1998) conducted for CDR used the demographic data produced by Khatib & Alami.

Another GIS data set has been produced by Khatib & Alami as part of its work for CDR, National Building Damage Assessment Study. The towns and villages were digitized as points from the 1:20,000 Army maps dated 1963 which are in the Stereographic projection. No attribute data was added.

Cadastral Boundaries

This GIS data set has been produced by Khatib & Alami as part of its work for CDR, National Building Damage Assessment Study. The limits of the cadastral boundaries were digitized as polygons from the 1:20,000 Army maps dated 1963 which are in the Stereographic projection. No attribute data was added other than the name of the area.

Caza Boundaries

This GIS data set has been produced by Khatib & Alami as part of its work for CDR, National Building Damage Assessment Study. The limits of the Kada boundaries were digitized as polygons from the 1:20,000 Army maps dated 1963 which are in the Stereographic projection. No attribute data was added other than the name of the kada.

Digital Terrain Model

This GIS data set has been developed from Spin 2 Russian Satellite imagery dated 1994, at 5 m resolution. The data is in Stereographic Projection.

Municipal Database

This database, developed for the Ministry of Municipalities and Rural Affairs, lists 1702 municipalities and mukhtar councils, and also has figures on the minimum and maximum populations.

Public Schools

Khatib & Alami, under a contract for the Ministry of Education, developed a GIS database that listed the number of public schools in each village, based on 1994 data.

Quarries

The database consisted of information on 279 quarries investigated in Lebanon. The type of information contained is listed below.

Identification code
Coordinates (Northing and Easting)
Investor name(s)
Organization
Licensed or not
Status (operational, stopped, abandoned)
Area in square meters
Type of material quarried
Cubic meters quarried per year
Percentage of area quarried
Byproducts
Percentage of waste material
Geographic extent of marketing
Type of products marketed
Type of products produced
Geological condition
Type of quarrying
Usage of explosives
Testing (if any)
Standards adopted if any
Water quality affected or not

Type of roads used
Number of lanes

Industrial Units

The first industrial survey conducted during 1994 collected information about 22,107 production units, many of which had less than three workers. Around two thirds had less than 5 employees, and were clearly light industries or non-service oriented units such as car mechanics. Around 28 percent had between five and ten employees, with the remaining 4 percent having more than ten employees. Manufacturing dominated the categories with 96 percent, with construction and mining or quarrying sharing the remaining 4 percent. The Ministry of Industry conducted the second phase survey (1995) collecting more detailed information, and the total number of records decreased to over 4,918. This included all units with ten or more employees, 20 percent of those having between five to ten employees, and 10 percent of the units having less than five employees. The second phase survey was finally published in the "Industrial General Census in Lebanon: Industrials in Lebanon" on January 1998 by Bacharia Printing Press.

Code	**Type**	**Count**	**% of total**
1	Agricultural Services	0	0
2	Cars, Trailers & Accessories	7	1
3	Chemicals & Derivatives	21	4
4	Clothes: Tinting & Tanning Furs	24	5
5	Coal & Refined Oil Derivatives	1	0
6	Construction	29	6
7	Electrical Instruments & Equipments	13	3
8	Foods & Drinks	133	26
9	Fundamental Metals	7	1
10	Furniture	49	10
11	Instruments & Equipments	17	3
12	Made Metals Except Instruments & Equipments	67	13
13	Medical, Optic Equipments & Watches	0	0
14	Mines & Quarries	2	0

15	Mine Materials Non-Metallic	46	9
16	Other Transport Equipments	0	0
17	Paper & Derivatives	2	0
18	Publishing, Printing & Media Communications	15	3
19	Rubber & Plastic Materials	16	3
20	Shoes & Leathers	14	3
21	Television, Radio & Media Communications	0	0
22	Textile	11	2
23	Tobacco Products	0	0
24	Wood & Derivatives	29	6

Agriculture

The Ministry of Agriculture conducted a nation-wide, village-level study of general indicators in 1997.

A more in-depth study covering 90 villages across Lebanon was later completed, but the results of the second study would not be valid for a small area such as the CAMP zone given the small number of villages that would fall within it.

More recently, the Ministry of Agriculture began a nationwide comprehensive survey of all agriculture units; however, this study is still underway with field work not finalized at this time.

Waste Water

The K&A LSWWP study provided the most comprehensive data about wastewater in Lebanon. K&A collected data from numerous sources and compiled several databases including one that describes the situation in 126 sewered communities and 124 non-sewered communities.

Storm Water Drainage

The K&A LSWWP study provides comprehensive data about storm water drainage in Lebanon, depending on numerous sources and compiled several databases including one that describes the situation in 47 communities.

Water Quality

Dr. May Jurdi published a study in 1992, "A Comprehensive National Study of Quality of Drinking Water in Lebanon", which was based on extensive field work during 1990 and 1991. The data was collected during the wet and dry seasons and included 200 random samples. These samples came from Greater Beirut, Bekaa, Mount Lebanon, the South, and the Israeli occupied strip. The following types of information were collected from the locations, over and above the analysis of the samples:

- Sources of drinking water: location, type, and hydrology;
- Waste water disposal: methods and problems;
- Solid waste disposal: methods and problems;
- Information on local residents: demography, water usage, and water purification.

The National Central Laboratory at the Ministry of Health conducted water quality testing. Results of 720 samples were collected from the NCL by K&A in 1993 and analyzed in their LSWWP study. The samples came from all regions of Lebanon, and included distribution networks, tanks, wells, springs, and rivers.

Rivers

The GIS data set has been produced by Khatib & Alami. The rivers were digitized from the 1:100,000 Army maps dated 1963 which are in the Lambert Conformic Conic projection. Attribute data consisted of length, type, and names of major rivers.

Land Use

The GIS data set has been produced by Khatib & Alami. The land use was derived from various sources, including the 1990 FAO Land Cover maps, forestry maps, data on irrigation, slope analysis, river data, road maps, and an agricultural map. The data is in the Lambert Conformic Conic projection.

APPENDIX E:

Summary of the National Strategy & Plan for Environmental Awareness

(Prepared by Capacity 21 Programme –UNDP)

With the current environmental status in Lebanon, the government is attentive to the importance of human development and awareness. For this purpose, the MoE and the Capacity 21 programme have established a National Strategy for Environmental Awareness. The basic principles of this strategy are the human rights for a life in a clean environment, and the right of human to exploit the resources in a renewable way.

The Objectives of the Strategy:

- Limiting the degradation of the environment.
- Avoiding the possible damages.
- Remediation of the environmental damages.

The Target People in this strategy are:

- Decision-makers.
- Participants in the decision-making.
- National and local institutions.
- Local associations and syndicates.
- The private sector.
- The Lebanese society.

The Headlines of the strategy:

-Treating the sources of pollution through:

-A media campaign for the awareness on the dangers of pollution on humans and environment.

- Activating and initiating the development plans for a balanced evolution.

-Focusing on the importance of the health, the environment and the economy.

-Avoiding the damages of pollution in work places, especially in the industrial zones, the energy production sites and the agricultural areas.

-Focusing on the responsibility of the individuals and related groups for the occurring environmental damages.

-Following an environmental management strategy.

Plan for the Application of the National Strategy:

-Building the capacities of the department of awareness

-Training the responsible on the different environmental issues in the field of communication, media and awareness.

-Building the capacities of the personnel involved in environmental issues in all the ministries.

-Establishing a yearly calendar for environmental activities with the collaboration of the local association and syndicates.

-Assigning specialists to work closely with the responsible on the different environmental issues to prepare the plans for the target people.

-Building the capacity of the people working in the media to deal objectively and scientifically in environmental topics.

-Training volunteers from the universities to prepare environmental brochures.

-Dealing with artists, for the collaboration and the creation of artistic works for environmental awareness campaigns.

-Permanent evaluation of the plan for new suggestions and amelioration

Appendix F. Extracts from the Tourism Development and Reconstruction Plan (1996).