Carrying
Capacity
Assessment

CAMP Cyprus

Carrying Capacity Assessment for Tourism of the Larnaca District

UNEP

PRIORITY ACTIONS PROGRAMME

CAMP CYPRUS

Priority Actions Programme
Regional Activity Centre
Split, December 2007

Author:
Mr. Zoran Klaric

National Consultant:
Mr. Panicos Nicolaides

Activity Team Members:
Mr. Glafkos Constantinides
Ms. Joanna Constantinidou
Ms. Athena Metaxa
Ms. Nana Asmeni Pavlou
Mr. Angelos Hannides
Ms. Despo Pilides
Mr. Michael Savvides
Mr. Spyros Stephanou
Ms. Lina Andreou and Mr. Paris Markou from Nicolaides and Associates

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Preface

The “Tourism Carrying Capacity Assessment (CCA) for Larnaca district with special accent on the southern Larnaca coastal area” is one of the activities initiated through the “Coastal Areas Management Programme” (CAMP) for Cyprus”. This work is being carried out by the Priority Actions Programme/Regional Activity Centre (PAP/RAC), as a part of the Mediterranean Action Plan (MAP). The overall project management will be carried out in close cooperation between the Cyprus Government and MAP-PAP/RAC. On the Cyprus side, responsibility for the project management will be exercised by the Director of the Environment Service acting as National Project Director. On the MAP-PAP/RAC side, PAP/RAC Director will be responsible for the Project.

“Tourism Carrying Capacity Assessment for Larnaca district with special accent on the southern Larnaca coastal area” is at the same time a part of the priority action “Development of Mediterranean Tourism Harmonized with the Environment”. It is done as a kind of implementation of the “Guidelines for Carrying Capacity Assessment for Tourism in Mediterranean Coastal Areas” as well as “Guide for good Practice in Tourism Carrying Capacity Assessment”.

The “Tourism Carrying Capacity Assessment for Larnaca district with special accent on the southern Larnaca coastal area” was prepared by Mr. Zoran Klaric from the Institute for Tourism Zagreb, Croatia, as the author of the work on the study, and co-ordinator of the whole PAP action “Development of Mediterranean Tourism Harmonized with the Environment”. His work was strongly supported by the experts from Cyprus, especially by:

- Mr. Glafkos Constantinides as MAP-PAP/RAC Project Task Manager and co-ordinator of the CAMP Cyprus;
- Ms. Joanna Constantinidou, Environmental Officer of Cyprus Environment Service;
- Ms. Athena Metaxa from Organization and Planning Department of Cyprus Tourism Organization; and
- Mr. Panicos Nicolaides from Nicolaides and Associates as the National Specialist.

Very important contributions to the study were made also by:

- Ms. Lina Andreou and Mr. Paris Markou from Nicolaides and Associates;
- Ms. Nana Asmeni Pavlou from Association of Cyprus Tourist Enterprises;
- Mr. Angelos Hannides from the Department of Fisheries and Marine Research;
- Ms. Despo Pilides from the Department of Antiquities;
- Mr. Michael Savvides from the Department of Lands and Survey; and
- Mr. Spyros Stefanou from the Department of Water Development.

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1. Background and Objectives of the Study

In the Mediterranean tourism is viewed as one of the most important industries representing nearly 30 percent of world's international tourist arrivals and receipts from tourism. In the light of such big tourist demand, it should be pointed out that the Mediterranean region is facing in many marine and coastal areas the problems of saturation and degraded environment.

Although tourism is generally less dangerous for the environment than the majority of other activities (industry, in particular) it does contribute, directly or indirectly, to the increased pollution of air, water and land and burdens the infrastructure systems due to its seasonal character. Tourism also has considerable negative impacts on the cultural heritage and social relationships with consequences the reluctance in many areas to accept tourism and, as a result, less tourist's satisfaction and lower productivity of tourism industry.

Considering all impacts of tourism, the Mediterranean coastal states, in their role of Contracting Parties to the Barcelona Convention and participants in the Mediterranean Action Plan (MAP), entrusted the Priority Actions Programme (PAP) of MAP with the implementation of a priority action entitled "Development of Mediterranean Tourism Harmonized with the Environment".

The Action is being implemented since 1985 with a total 14 Mediterranean countries participated actively. It is based on four major goals:

1. Integrated planning of development and management of the Mediterranean basin;
2. Pollution monitoring and research programme for the Mediterranean basin;
3. Development of relevant legislation; and
4. Institutional and financial framework.

The action included a series of seminars and expert meetings organized on the basis of national reports and case studies of participating countries (1986-1989) resulting in the preparation of national reports and case studies as well as in the preparation of "Guidelines for an Environmental Approach to the Planning and Management of Tourism in Mediterranean Coastal zones" and a proposal of the methodology of carrying capacity assessment (CCA) in tourism.

After that proposal had been presented and discussed at a workshop organized in 1990 by UNEP Industry and Environment Office and World Tourism organization, the CCA studies for Brijuni archipelago and island of Vis in Croatia were prepared, and shortly after, a similar study for the central-eastern part of the island of Rhodes in Greece. All studies were made between 1990-1992 and were favorably accepted by the local and central authorities. On the basis of over mentioned reports a team of experts have prepared the "Guidelines for Carrying Capacity Assessment for Tourism in Mediterranean Coastal Areas". After review, the Guidelines were discussed and amended in an expert meeting in Split in June 1995.

Simultaneously with the Guidelines two new studies of Tourism CCA were prepared according to the Guidelines and in order to test it in practice – for Lalzi Bay in Albania and for the area of Marsa Matrouh – Fuka in Egypt. The work on the Lalzi Bay study was unfortunately stopped in 1996 due to the turbulent political situation in Albania, but the one for Matrouh-Fuka coastal zone was continued and finished in 1999. The special interest for the PAP methodology in less developed countries of the Mediterranean action has continued

with the organization of special training courses on preparation of Carrying Capacity Assessment for the local experts in Syria (1998) and Libya (1999).

Considering simplicity and adaptability on local conditions, PAP methodology for Carrying Capacity Assessment became interesting also for developed countries of the Mediterranean, especially those facing problems with tourism saturation. In Malta, local team has prepared CCA study for the whole Malta archipelago in 2001 with PAP advice only and in Province of Rimini in Italy in 2003 with PAP supervision.

In 2003 another training course on preparation of Carrying Capacity Assessment was held in Lebanon and finally The Guide to good practice to Carrying Capacity Assessment was prepared. This comprehensive document contained all before mentioned experiences and has included some other examples in the Mediterranean. The best approval for the actuality of PAP methodology for Carrying Capacity Assessment in the Mediterranean was its recent use in two another developed areas: partly in Slovenian Riviera in 2006 and now in Cyprus.

Besides the preparation of CCA report, main objectives of the activity Carrying Capacity Assessment in Cyprus are:

- Review and elaboration of the existing land use, tourism and infrastructure development and environmental problems in the coastal area of Larnaca district and especially Southern Larnaca Coastal Area in relation to the prevailing international, national and local institutional and policy framework;
- Production of inputs useful for the general strategic and planning documents dealing with tourism in Larnaca district and Cyprus as a whole;
- Development of Guidelines for the operation of CCA methodology in Cyprus and their application to a Pilot Case Study on the southern Larnaca coastal area in Larnaca district; and
- Development and submission of a practical proposal for the incorporation of CCA for Larnaca district within the Cyprus policy framework.

The methodology of the work includes five phases and related activities:

1. Elaboration of the established and evolving methodologies and practices of CCA in the Mediterranean and the EU, and their achievements and problems.
2. Collection and codification of all available information from the relevant governmental bodies setting out the current practices used, within the framework of decision-making on tourism, land use planning, environmental management and infrastructure development in Cyprus. This is needed in order to assess the carrying capacity of the coastal resources involved in such development, and, based on that, review of the main deficiencies in the assessment of the carrying capacity of coastal resources in the legal framework in Cyprus.
3. Formulation of CCA Guidelines brief suitable to address existing and future environmental assessment issues in coastal development in Cyprus.
4. Implementation of a CCA Pilot Application Case Study in Larnaca District with special accent on southern Larnaca coastal area.
5. Formulation of proposals for the incorporation and operation of CCA within the Cyprus policy framework to support sustainable use of coastal resources in Cyprus.

According to proposed activities the authors of this document hope that it will prove the applicability of PAP methodology for carrying capacity assessment for Larnaca district and therefore to serve as a model to the other parts of Cyprus.

2. Problems Concerning Tourism Carrying Capacity of Larnaca District

2.1 The Concept of the Carrying Capacity

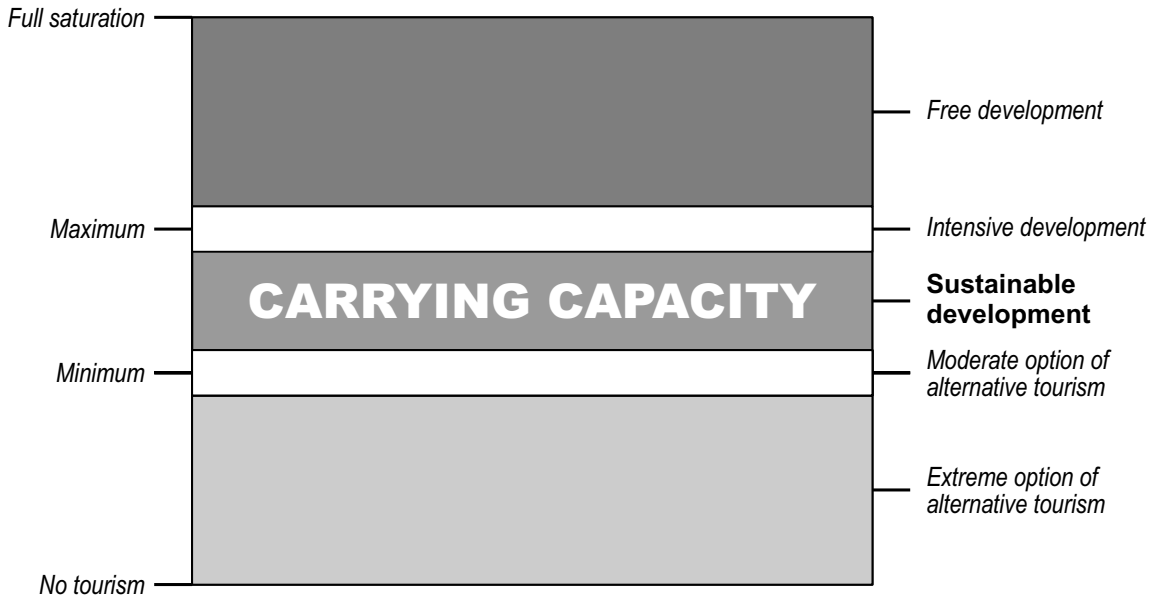
The concept of tourism carrying capacity is based on a general statement that any form of development within the carrying capacity of ecosystem means a sustainable development. That fits in a general definition of **Sustainable Development** as:

- a form of development which uses the natural ecosystems as resources of production and consumption growth leaving them unchanged for the future generation,

or, more simple, defines as

- A Development within the Carrying Capacity of Ecosystem.

Figure 1: Carrying Capacity Assessment According to PAP Methodology



According to such general definition of carrying capacity and sustainable development, **Sustainable Development of Tourism** can be defined as:

- a form of tourism development which uses natural resource and cultural heritage to increase the number of visitors and the profit from tourist activities, but preserves them for the future generations,

or as:

- A Development of Tourism within the Carrying Capacity of Tourist Resources.

The desirable sustainable tourism development option functions as a kind of compromise between generally intensive forms of tourism development promoted mainly by investors/ entrepreneurs and generally restricted forms of tourism development promoted mainly by ecologists. Such a methodology has a starting point in a view that the assessment of limits for

carrying capacity can rarely be measured precisely – it is almost always judged subjectively depending on which view is represented by subjects responsible for the assessment.

Therefore, the Carrying Capacity Assessment for Tourism by PAP methodology is based on two elements that make a difference from previous methodologies:

1. a flexibility of physical-ecological-infrastructural, socio-demographic and political-economical parameters, which need to have equal treatment, and
2. a necessity for the analysis of different scenarios before final assessment of Carrying Capacity

Such approach has been proved as the most useful in medium-size areas (regional level), such as Larnaca district. Although the PAP methodology is therefore adapted to such areas, it can be used also in larger areas and in other coastal zones, but not in very small areas (local level) and in non-coastal areas.

In spite of specific approach, such assessment of tourism carrying capacity follows the key procedure accepted by World Tourism Organization, represented in WTO definition of tourism carrying capacity as the maximum number of people that may visit the tourist destination without causing destruction of the physical, economic and socio-cultural environment and an unacceptable decrease in the quality of visitors' satisfaction.

2.2 Larnaca District and Southern Larnaca Coastal Area as the Subjects of a Carrying Capacity Assessment

The issue of CCA together with that of "sustainable tourism growth" have been raised and discussed as a result of the fact that certain regions or areas in the Mediterranean coastal regions of intensive tourist visitation over the last 20 years have become less attractive. This is not only happening regarding environmental conditions (deterioration) but also due to the interrelated fact of the reduction in the number of the "high budget tourists". Such a development is caused by excessive or intensive and ill-planned growth in the levels of urbanisation or development of these areas with the construction of diverse numerous and densely built forms of accommodation (new hotels, apartments, private/secondary residences settlements etc.) to cater for large numbers of tourists.

In this context, Larnaca district is at the same time a part of Cyprus as a developed, mature and partly saturated tourism destination, but also one of the rare parts of Cyprus with still some free space on the coast for further development. This is especially visible for the southern Larnaca coastal area, which is partly completely free from tourism development thanks to proximity to protected area status and large international airport.

However, the observed over the last 3-4 years type of development (mainly apartments for permanent use catering mainly foreign market) in the study area, or in adjacent coastal zones, raises questions as to whether and to what extent this type of development becomes – as the prototype of tourism development in the long run, counterproductive and/or conflicting to the area's tourist capability.

Although the subject of the CCA study pertains to a specific geographic area of Larnaca district covering 1.050 sq Km and about 94 Km of coastline, the analysis of adjacent areas is considered necessary from an operational point of view, since these areas are organically/functionally related as a part of the island of Cyprus as a clear and specific entity.

Within this broader spatial context and drawing on the preceding conceptual analysis of carrying capacity issues, the subject under investigation should embrace ideally the analysis of three interrelated dimensions of the determinants of capacity:

1. The **physical dimension** involves determining and specifying capacity in terms of **physical limits to output**; i.e. limits on a defined output which is considered as the number of people/visits or visitor days per time period at a particular resource.

   From an **operational** standpoint, physical capacity limits are determined and/or imposed within specific institutional and legal frameworks applied in relation to the characteristics/properties of environmental attractions and to specific tourism activities (e.g. outdoor recreation, sightseeing, etc.)
2. The **economic dimension** focuses on determining the capacity output from an economic only point of view in cost terms; i.e. by investigating from the supplier's side, whether productive efficiency of tourist enterprises at each output level is maximised while unit costs are at their lowest possible level.

   In **operational** terms, this dimension of capacity is difficult to assess since many of its determinants (technological and economic factors) are outside the control of the suppliers.
3. The **social dimension** pertains to delimiting the Socially Optimal Visitor Flows (SOVF), i.e. a measure of capacity that is assessed by considering both costs and benefits incurring to the host community (individuals and public institutions) from different or alternative levels of output.

The data or information inputs required for assessing capacity levels are very high. Due to the limited data available, especially for the narrow study area, there are formidable difficulties regarding the estimation of social costs and benefits of different/alternative tourist flows on different levels of output. The specific problem is also a combination of urban and rural environment – Larnaca town as an entity less sensitive to building investments in general and especially housing units, and neighbouring rural environment trying to keep its identity and way of life.

This problem is especially visible in the Southern Larnaca Coastal Area as a pilot zone, since it is partly integral part of the central quarter of Larnaca town facing some specific urban problems; the most important are proximity to large international airport and related noise problems, a lot of abandoned houses owned by Turkish-Cypriots and town's need for recreational zones near the coast.

With an emphasis on the physical dimension relevant to the subject of CCA information inputs elaborated in the following analysis of the methodological approach used, pertain to:

- statistical data and cartographic material;
- relevant to this study and the ICAM plan documents/reports; and
- information based on observations and discussions with the relevant authorities during visits to the area.

2.3 The Methodology Used in the Carrying Capacity Assessment

Having in mind the "Guidelines for Carrying Capacity Assessment for Tourism in Mediterranean Coastal Areas" and more recent document "Guide to good practice to

Carrying Capacity Assessment, the Tourism CCA for Larnaca district and Southern Larnaca Coastal Area is based on starting elements such as:

- multifaceted nature of tourism, which is always dependent of the given time and space;
- type, size and vulnerability of the tourist attractions;
- types and level of tourism development;
- relationships between macro and micro tourism policies; and
- the preferences of local population.

The contents of the study are following the methodology of the Guidelines, meaning four main phases of the work:

1. Documentation and mapping;
2. Data analysis & synthesis;
3. Tourism development options; and
4. CCA formulation phase including the proposal of physical distribution of tourism development.

The Data Collection

The data collection has included the review of all available documents and materials, as well as field work. The documents have included various statistical materials, especially Statistical Service of the Republic of Cyprus, already finished and on-going documents regarding the area, especially those made for the CAMP Cyprus, various tourist brochures and maps etc.

Other data was provided by the Department of Fisheries and Marine Research, Department of Land and Survey, Department of Water Development, Cyprus Tourism Organization, Department of Town Planning and Housing, Department of Antiquities, Environment Service, Association of Cyprus Tourist Enterprises and the National Specialist. The field work has included two missions by the PAP staff in 2007.

The Data Analysis and Synthesis

The data analysis includes a review of all collected materials in a way that three main groups of parameters and indicators according to the Guidelines (physical-ecological-infrastructural, socio-demographic and political-economical) are analyzed. This has included a brief review of existing literature on carrying capacity assessment for tourism development, a review of the physical characteristics of the area, a survey of the infrastructure provision in the area as well as the economic activities undertaken in the area.

The data synthesis deals with a key problems deriving from the analysis, including four main groups of problems:

1. Issues of management and protection;
2. Tourism demand and development – choices relative to tourist development based on hotels and similar establishments and development based on secondary residences;
3. Land-use planning policy and development implications; and
4. Possible alternative approaches to tourism development.

Tourism Development Options/Scenarios

Data analysis and synthesis are leading to the crucial part of the carrying capacity assessment, which is the preparation of several possible tourism development scenarios,

which have to be analyzed in order to achieve the most realistic option as a basis of carrying capacity. Four possible scenarios can be defined as:

1. Continuation of existing trends based on intensive building of secondary residences / apartments in the area;
2. The option of development of hotels and similar establishments based on the model of neighbouring areas in Agia Napa or Limassol;
3. Alternative tourism option with an accent on protection of natural areas; and
4. Sustainable tourism development option.

Although all four scenarios fit in the general scheme of CCA according to PAP methodology, they have some specific characteristics due to the existing situation in the area. Namely, the first scenario is more environmentally unfriendly than the second one due to a fact that secondary residences do not produce profit and work places for the area and permanently occupy coastal area for a long time, what can definitely destroy a tourism resource basis in the whole region. At the same time, in spite of possible large development second scenario is less dangerous due to a pure economical need of larger free spaces and beach areas.

The third scenario has to be viewed as not very likely, or feasible on a small scale. It is caused by a fact that coastal area in Larnaca district in general has limited ecological value, except the Larnaca Salt lakes and five smaller Natura 2000 Sites. Other parts of the coastline with tourism facilities or secondary residences are either used by agriculture or polluted by industry, meaning that possible expansion of new protected areas is not very likely to happen.

CCA Formulation Phase Including the Proposal of Physical Distribution of Tourism Development

CCA formulation phase is based on the sustainable development scenario as a result of a compromise between need for protection of tourist resources and reality in the area. In the case of Larnaca district it is evident that requirements necessary to achieve the sustainable tourism development scenario are dependent primarily on political decision. That means that physical distribution of tourism development had to be adapted to the existing physical distribution of apartments, which have already occupied (or will in the near future) the most attractive parts of the coast.

Therefore, the structure of tourism accommodation capacities as well of tourism services and support activities is not the most desirable one, but the one which is realistic in the actual circumstances. The same statement is concerning tourism development programme proposal in space and time.

2.4 The Carrying Capacity Assessment of Larnaca District as a Part of Integrated Coastal Area Management (ICAM)

Since the Carrying Capacity Assessment for Tourism of the Larnaca district is being prepared as an input to the Coastal Area Management Programme (CAMP) for Cyprus its results should be integrated in order to be able to respond to the problem of requirements of sustainable development of the area. The inclusion of CCA in the process of integrated planning and management of the existing legal framework of Cyprus is a necessity without which there is no successful tourism or economic development of the area. The results of CCA are at the same time very useful in the production of strategic documents dealing with tourism on Cyprus, since they include deep analysis of various patterns of tourism development.

3. Data Analysis

3.1 The Position of Cyprus in Comparison with Other Similar Destinations in the Mediterranean

Before determination of the study area in Cyprus, for the data analysis it is necessary to view the position of Cyprus as a whole in comparison with other similar destinations in the Mediterranean. Such comparison is important because the island of Cyprus is very clear geographical entity facing all the most important aspects of tourism development on the whole of its territory. This is especially concerning the elements of tourism carrying capacity such as concentration of tourist on the coast, water supply, waste management and relations between tourists and host population.

Cyprus is located in the far east of the Mediterranean, representing the easternmost part of the European Union. It is closer to Asian states of Turkey, Syria and Lebanon than to any European country. Since it is also very close to Israel and Egypt, it can be stated that its position is favourable regarding strategic importance, but less favourable regarding proximity to tourism market. Nevertheless, this distance is not too far from the rest of Europe and has caused slightly higher consumption per tourist than in other Mediterranean areas reachable by car or train.

For the Mediterranean terms Cyprus is relatively large island, third after Sicily and Sardinia and slightly larger than fourth and fifth islands in the Mediterranean – Corsica and Crete. On the other hand, Cyprus is relatively small entity as a state, considering its area under 10.000 sq kilometres and about one million inhabitants.

Another problem is its political de facto division from 1974 between area under government control and area under occupation. Area under government control or The Republic of Cyprus is developed country based on tourist service sector and part of European Union, showing constant economic and population growth. Occupied area is medium developed with about 45% of GDP of area under governmental control; it is more oriented on agriculture and dependent on constant financial aid from Turkey.

Figure 2: Geographical Position of Cyprus

Considering such differences and a fact that between the area under governmental control and the occupied area there are very few contacts, there is no sense to make comparisons of the whole Cyprus with other similar destinations. Since the available data dealing with carrying capacity issues were also concerning mostly the area under government control or The Republic of Cyprus, all the comparisons were made for this area only.

The Republic of Cyprus is covering 64% of the territory, 74% of the population and only 50% of the coastline of the whole island. From about 431 Km of coastline in the Republic of Cyprus about 19% is covered with sand, 19% with shale, 47% is rocky and the remaining 15% other (mostly human constructions).

If we compare it with other island entities in the Mediterranean it is regarding size the most similar to Balearics and regarding number of population to Crete. The number of tourist arrivals on Cyprus is relatively high considering its size, but the concentrations are still much lower regarding the total area than on Balearics or Malta.

If we look at the ratio between the number of tourists and the total number of population, the concentration of tourists is also the highest on Balearics, but Cyprus is on the second position before much smaller Malta and before sparsely populated Corsica. The worst concentration indicator is the number of tourists per one kilometre of coastline, where Cyprus is on the second position, only slightly after Balearics and much before Malta and other island entities. Therefore is interesting that due to the fact that the coastline of Cyprus (area under government control) is not very indented, its coastline has the same length as much smaller Malta.

Table 1: Basic Data About Cyprus and Similar Mediterranean Island Entities

	Cyprus (excl. occu-pied areas)	**Balearics**	**Corsica**	**Sicily**	**Malta**	**Crete**
Area in sq Km	5,896	4,992	8,680	25,708	315	8,336
Population in thousands (2007)	735,800	1,031,617	279,440	5,245,806	386,007	635,031
Population density	124.8	206.7	32.2	204.1	1,225.4	76.2
Length of coastline	431	790	784	990	320	836
Foreign tourist arrivals in thousands 2005	2,470,063	9,657,516	280,388	1,540,745	1,171,000	1,414,626
Domestic tourist arrivals in thousands 2005	913,820	2,972,026	806,016	2,762,903	,,,	318,053
Total tourist arrivals in thousands 2006	3,383,883	12,629,542	1,086,404	4,303,648	1,171,000	1,732,679
Domestic tourism ratio	27.0	23.5	74.2	64.2	0.0	18.4
Tourists per inhabitant	4.6	12.2	3.9	0.8	3.0	2.7
Tourists per sq Km	574	2,530	125	167	3,717	208
Tourists per Km of coast	7,851	15,987	1,386	4,347	3,659	2,073

Sources:
CIA World Fact book Website, Island directory UNEP Website, Institute for tourism Zagreb internal data basis

In the Table 1 only Mediterranean spatial entities comparable with Cyprus were presented, and not the states as a whole. Having in mind that such concentrations of tourism are much smaller in all other Mediterranean countries except Malta, the general conclusion is that Cyprus as a country has one of the highest concentrations of tourists regarding space and

number of population in the Mediterranean in general. At the same time the concentrations on Cyprus are smaller than on Malta and Balearics and also than on many other smaller island entities like Rhodes, Corfu, Santorini, Elba etc.

Having in mind those examples the main question is what is the general concept on Cyprus regarding tourism carrying capacity: will Cyprus follow the Balearic example of strong orientation towards tourism and excessive building of secondary residences or examples of Corsica or Crete with more moderate tourist development.

3.2 The Position of Larnaca District in Cyprus

Larnaca district covers the central part of the southern shoreline on the island of Cyprus. Its share in the area of Cyprus under government control is 18%, share in the population 17% and it is occupying 23% of the coastline. From all the districts it is closest to the average of Cyprus regarding population density and change of the population – density of 122 inhabitants per sq Km being slightly lower than the whole Cyprus under government control, and the population change of 11.1% between 2001 and 2005 being the same as Cyprus as a whole.

The town of Larnaca with 46,666 inhabitants represents 40% of the district and including the closest suburban municipalities of Aradippou and Livadia 62,997 inhabitants or 55% of the whole district. The town itself is third largest city in Cyprus after Nicosia and Limassol. Its traffic position is probably the best of all towns on Cyprus considering central position between other two coastal towns Limassol and Paphos, the shortest distance to the capital Nicosia in the hinterland and especially due to the location of the highest volume International Airport in Cyprus.

Figure 3: Position of Larnaca District and Pilot Area in Cyprus

It is interesting that in spite of such location Larnaca District is the least important coastal district of Cyprus in tourism terms. It represents only 7.9% of tourist overnights, whilst the smallest district Famagusta represents 40% and Paphos 34%. The pressure on the coastline is also the lowest in Larnaca District – it is 11 times lower than in Famagusta and 3 times than in Paphos District.

Table 2: Basic General Data About Cyprus Districts

	Nicosia	Paphos	Limassol	Larnaca	Fama-gusta	CYPRUS TOTAL (excluding occupied areas)
Area in sq Km	1,850	1,396	1,393	1,050	207	**5,896**
Population in 2001	273,642	66,364	196,553	115,268	37,738	**689,565**
Population in 2005	302,600	73,600	219,900	128,100	42,200	**766,400**
Population change 01/05	10.6	10.9	11.9	11.1	11.8	**11.1**
Population density	163.6	52.7	157.9	122.0	203.9	**130.0**
Length of coastline	21	154	106	94	56	**431**

Sources: *Statistical Service of the Republic of Cyprus, UK Hydrographic Charts (scale 1/100000) and a Visitor's map of Cyprus – Cyprus Tourism Organization*

At the same time the number of secondary residences or "vacant or temporary residences" is after Limassol district the highest in Larnaca District. Concentrations are in Larnaca District higher than in Paphos District, which is in tourism terms much more developed and considering capacities in hotels and similar establishments relatively high also in comparison with Limassol and especially Famagusta district.

Table 3: Basic Tourism Data About Cyprus Districts

	Nicosia	Paphos	Limassol	Larnaca	Famagusta	Cyprus Total (excluding occupied areas)
Nights spent total in 2005	215,000	5,193,000	2,339,000	1,197,000	5,969,000	**15,058,000** (incl, 146,000 in hill resorts)
Nights per kilometre of coast		33,721	22,066	12,734	106,589	**47,056**
Number of vacant or temporary residences in 2001	15,733	13,070	21,666	12,699	7,373	**70,541**
Above per kilometre of coast		114.6	254.9	169.3	216.9	**220.4**
Nights per inhabitant	0.7	70.6	10.6	9.3	141.4	**19.6**
Nights per sq Km	116	3,720	1,679	1,140	28,836	**2,554**

Source: *Statistical Service of the Republic of Cyprus, UK Hydrographic Charts (scale 1/100000) and a Visitor's map of Cyprus – Cyprus Tourism Organization*

It is very well known that in spite of high profits on the short term, occupation of the coast with secondary residences/apartments is on the long term spatially and economically unsustainable. Its results can be various negative impacts on the environment and consequently very small possibility of achieving sustainable development for the region.

This means that there is an urgent need for comprehensive study and cross examination of the available resources against the capabilities of the region. The first step in that direction is the need to provide a clear and well defined profile for the area, showing the potentials and constraints for achieving the ultimate goal of sustainable development.

The following step is to determine the main issues that need careful consideration when proposing and assessing different development scenarios for the area. The outcome of such a work can then be used as a base for the development plans for the region.

3.3 Main Physical Characteristics of the Area and Environmental Considerations

Larnaca district is located in the central southern part of the island. It includes 94 Km of the Mediterranean coastline, mountain area of the Troodos Mountains covering much of the western part of the district and a small part of Mesaoria Plain in the north. It has patches of woodland in which eucalyptus, acacia, cypress, and lowland pine predominate.

The terrain of the eastern and southern part is relatively flat whereas the western and northern part is mountainous. The area could be considered less mountainous than the Limassol and Paphos Districts. The highest elevation is 4,606 ft (1,404m), on the border with Nicosia district.

Figure 4: Southern Larnaca Coastal Area from the Air in May 2007 (Photo: Z. Klaric)

Larnaca District as well as the rest of Cyprus have Mediterranean climate with warm and dry summers and mild winter. The summer season, which extends from May until September, is characterized by clear sunny sky and almost no rain. The winter season, starting in October up until March, is mainly windy with certain periods of heavy rains.

Most of the rainfall occurs in winter with maximum in December (15 days with rain and 86.4 mm precipitation) and minimum in August (0.4 mm precipitation or practically no rain). The summer and winter monthly averages of air temperatures do not reach extreme values. In Larnaca minimum monthly average of air temperature is reached in February (11.7°C) and maximum in August (27.6°C).

Agricultural areas, located mainly close to the coastline, produce barley, potatoes, fruits, vegetables, and nuts. Most of the needs for irrigation water are covered by the Northern

conveyor, because water sources in Larnaca District are limited. Industry, located mainly in the town of Larnaca, produces milled flour, canned fruit and vegetables, beverages, wood and furniture, paper products and textiles.

The coast in Larnaca District is mainly flat or slightly hilly. That is similar to the developed areas of Agia Napa – Paralimni and Limassol and different from more mountainous Paphos area. There is some sand a rocky beach along the coast, surrounded mostly with the agricultural areas.

Figure 5: Southern Larnaca Coastal Area from the Air in September 2003 (Photo from Google Earth)

In the study area there is probably the most important natural monument in the District – The Larnaca Salt lakes close to Larnaca International Airport. The Lakes are designated as a Wetland of International Importance and are famous because of beautiful scenery and preserved wildlife (especially flamingos). Along the Larnaca District there are five Natura 2000 Sites, which are, Alykes Larnaca (Salt lakes), Periochi Lympion-Agias Annas, Dasos Stavrovouniou, Periochi Lefkaron and Ethiko Dasiko Parko Risoelias.

The small study zone called Southern Larnaca Study Area between Tremithos River and Larnaca International Airport encompass 12 Km of coastline, from which 2 Km belong to the Meneou Community, 3 Km to the Larnaca town and the remaining 7 Km to the Perivolia Community. The coastal strip belonging to the town of Larnaca is completely under protection, and the remaining coastal areas are declared as tourist zones. Nevertheless, they are covered almost exclusively with secondary residences / apartments and not with hotels and similar establishments.

As Cyprus as a whole, Larnaca district is very rich in cultural heritage, especially from the ancient period. In district there are total 33 ancient monuments of first schedule (or first and second schedule) and 107 monuments of second schedule. From the tourist point of view the most important monuments of first schedule are the site and remains of the ancient town and necropolis of Kition (including the fortifications) and the Fort in Larnaca and the site and remains of a Neolithic settlement at Vouni in Choirokoitia (UNESCO World Heritage Site).

Table 4: Ancient Monuments of First Schedule in Larnaca District

Nr	Town or village	Ancient Monuments	Observations
1	**Larnaca**	The site and remains of the ancient town and necropolis of Kition	First & Second schedule
2	**Larnaca (Scala quarter)**	The fort	First Schedule
3	**Larnaca (Sotiros quarter)**	The site and remains of an ancient settlement at Perivolia	First Schedule
4	**Larnaca (Sotiros quarter)**	Ancient tomb (Cobham's Tomb)	First Schedule
5	**Larnaca (Sotiros quarter)**	Ancient tomb (Evangelis Tomb)	First Schedule
6	**Larnaca (Chryso-politissa quarter)**	Ancient built tomb	First Schedule
7	**Larnaca (Chryso-politissa quarter)**	Part of the site and remains at *Bamboula*	First & Second schedule
8	**Larnaca (Agios nicolaos quarter)**	Part of the fortifications of the ancient Kition	First Schedule
9	**Larnaca (Agios nicolaos quarter)**	Masonry portions of arched aqueduct and ruined wall erected by Abu Bekir	First & Second schedule
10	**Alaminos**	Medieval Tower	First Schedule
11	**Athienou**	The site and remains of Late Bronze Age settlement at *Pambularintis Koukouninas*	First & Second schedule
12	**Choirokoitia**	The site and remains of a Neolithic settlement at *Vouni*	First & Second schedule
13	**Choirokoitia**	The Commandery of the Knight Templars	First Schedule
14	**Kalavasos**	Olive press	First Schedule
15	**Kalavasos**	The site and remains of ancient copper slag at *Skourka*	First Schedule
16	**Kalavasos**	Watermill	First Schedule
17	**Kalavasos**	The site and remains of an Early Christian settlement (& 2 Late Christian Basilicas) at *Kopetra*	First & Second schedule
18	**Kalavasos**	Site and remains of ancient settlements at *Agios Dimitrios, Kaoukkos, Kopetra, Mankia, Paboules*	First & Second schedule
19	**Kalo chorio**	The site and remains of a Late Bronze Age to Hellenistic period settlement and sanctuary	First Schedule
20	**Kato drys**	Houses of traditional architecture	First & Second schedule
21	**Kiti**	The medieval bridge and wall	First Schedule
22	**Lefkara, Pano**	Houses of traditional architecture	First & Second schedule
23	**Maronı**	The site and remains of ancient settlement at Y*ialos, Aspres* and *Vournes*	First & Second schedule
24	**Maronı**	The site and remains of ancient settlements at *Vournes* and *Tsaroukkas*	First & Second schedule
25	**Ormideia**	The site and remains of an archaic cemetery	First Schedule
26	**Perivolia**	Mediaeval Tower	First Schedule
27	**Perivolia**	The site and remains of a Roman period settlement	First Schedule
28	**Petrofani**	The site and remains of an ancient settlement at *Malloura* and *Maghara Tepesi*	First & Second schedule
29	**Pyla**	Mediaeval Tower	First Schedule
30	**Pyla**	The remains of an ancient site and tomb	First Schedule
31	**Pyrga**	The Royal Chapel (the Church of Agia Aikaterini)	First Schedule
32	**Softades**	The site and remains of an ancient settlement	First Schedule
33	**Xylofagou**	The watch tower at Cape Pyla and site	First Schedule

Source: *Department of Antiquities of the Ministry of Communication and Works*

Some monuments of second schedule have much bigger importance from the tourist point of view than some monuments of first schedule – the best examples are The Church of Agios Lazaros in Larnaca, Stavrovouni Monastery in the nearby mountains and two monuments in the study area – The Mosque of Hala Sultan Tekke (as one of the most important in Moslem World) and Abu Bekir Aqueduct near Dromolaxia. Besides those two monuments, in the study area there is also very important Church of Panagia Aggeloktistou and medieval bridge and wall in Kiti, and the site and remains of a Roman period settlement and medieval tower in Perivolia.

3.4 Existing Infrastructure and Constraints upon Opportunities for Development

Water Supply

According to the actual data, the total water demand on Cyprus was 265.9 million cubic meters (MCM), from which 47.9% came from groundwater, 38.2% from surface water, 12.6% from desalinization plants and remaining 1.3% from springs. The majority of water was used for agricultural purposes (69%), and the remaining 31% mostly for domestic use by inhabitants (20%). Demand from water in tourism includes only 5.3% of total demand for water, as seen in the Table 5.

Projected water demand in 313.7 MCM for the year 2020 is about 18% higher than in 2000 and is based on the same demand for water in agriculture as in 2000. Other users show much higher demand, especially tourism showing about 120% higher demand for water in 2020 or 9.8% of total demand.

Table 5: Projected Water Demand on Cyprus 2000-2020 in MCM

Sector		2000	2005	2010	2020
Agriculture		182.4	182.4	182.4	182.4
Domestic	**Inhabitants**	53.4	58.4	63.2	73.5
	Tourism	14.1	18.0	22.9	30.8
Industry		3.5	5.0	6.0	7.0
Environment		12.5	14.0	16.0	20.0
Total		**265.9**	**277.8**	**290.5**	**313.7**

Source: *THE ASSESSMENT OF WATER DEMAND OF CYPRUS, 2001, Ministry of Agriculture, Natural Resources and Environment, Water Development Department & Food and Agriculture Organization (FAO), Project TCP/CYP/8921*

The share of Larnaca District in water demand of the whole Cyprus was about 15%, what is slightly less than the share of the district in total number of inhabitants. From total 10.89 MCM consumed in one year total 5.53 MCM or 50.8% refers to the Larnaca Water Board and 0.88 MCM or 8.1% to the study area (communities Meneou, Dromolaxia, Kiti and Perivolia and almost uninhabited part belonging to Larnaca town). The majority of water for the district is coming from two desalinization plants in Larnaca and Dhekelia and smaller part from Tersefanou Treatment works.

Potable water is supplied mainly from the Larnaca desalination plant located near Larnaca International Airport (capacity 52,000 m³/day) and only occasionally from Dhekelia and Tersephanou. It is part of the Southern Conveyor System. The annual demand of the Larnaca town and vicinity is about 6.5 MCM.

Irrigation water is supplied mainly through Tremithos as the main river of the area. Tremithos has an associated coastal aquifer, Kiti, with a recharge dam by the same name (capacity 1.6 mcm). There is salinization of the aquifer from sea intrusion due to over pumping. In the Kiti area an irrigation network was constructed of area of 1,150 ha, with water supplied from dams of the Southern Conveyor. The irrigation involves areas of the villages Kiti, Perivolia, Dromolaxia, Tersefanou and Meneou.

Although desalination plants provide considerable safety of supply, shortages are inevitable in cases of 3 year drought or more. Curtailment of supply usually implies a 20% reduction, or making water available to homes for a few hours three times per week. The whole aspect of

water management will be examined in the studies carried out for the implementation of the Water Framework Directive. The present price at 45 c/m³ is considered low, and the overall costs are about twice as much.

Such distribution is showing four important facts:

1. Desalinization is chosen as a solution for the lack of groundwater sources on Cyprus in general;
2. Agriculture is and will remain the main consumer of water;
3. Demand for water in tourism is relatively small considering its share in the economy of Cyprus; and
4. The share of Larnaca District and Southern Larnaca coastal area in water demand is smaller than the share of the district and the area in the total of Cyprus;

Considering before mentioned circumstances and overall dependence on the water from desalinization plants, it can be generally suggested that water consumption cannot figure as a limiting factor for carrying capacity. Nevertheless, in cases of drought, as happened this year 2007, water shortages can produce serious problems considering actual desalinization capacities.

Table 6: Water Demand by Area in 2000 (MCM)

	Domestic Inhabitants	Domestic Tourism	Total	Total %
Nicosia & Suburbs	16.6	0.7	17.3	26%
Limassol & Suburbs	12.8	3.6	16.4	24%
Larnaca & suburbs	5.8	2.0	7.8	12%
Paphos & suburbs	3.0	3.5	6.5	10%
Famagusta (south)	1.2	3.5	4.7	7%
All villages	11.3	0.8	12.1	18%
British Bases	1.8	-	1.8	3%
Turkish sector / Nicosia	1.0	-	1.0	1%
Total	**53.4**	**14.1**	**67.5**	**100%**

Source: *THE ASSESSMENT OF WATER DEMAND OF CYPRUS, 2001, Ministry of Agriculture, Natural Resources and Environment, Water Development Department & Food and Agriculture Organization (FAO), Project TCP/CYP/8921*

This is caused by constant in growth in demand for domestic use. The growth is the highest in Paphos area and suburbs with an increase at an “explosive” rate of 10% annually over the past 10 years, reaching about 26 MCM by the year 2017. It is estimated that the shortfall of supply over demand will be 16 MCM which will have to be covered by desalination.

This growth and possible shortages are strongly connected with the building of secondary residences. One of the best examples is Southern Larnaca study area, where after Larnaca town and adjacent settlements of Aradippou and Livadia with total 7,565,951 M^3 annual water sales next positions are taken by Pyla with 653,721 M^3 (which includes the most of hotels in the district outside Larnaca) and Perivolia (including mainly secondary residences) in study area with 435,262 M^3. Both villages have less than 2,000 permanent inhabitants, but have much larger water sale than villages Dromolaxia, Xilofagou and Athienou having each more than 4,000 inhabitants.

Although building of new desalinization plants is therefore inevitable, according to the actual experiences it cannot seriously diminish economical outputs of tourism. In other words,

relatively high price for water in comparison with some other destinations in the Mediterranean is not functioning as a limiting factor for carrying capacity. On the other hand, it should not be ignored that desalination facilities are also one of the major electricity consumers in the island. Therefore they can seriously affect carrying capacity in energy sector and consequently contribute in the growth of CO_2 emission and air pollution in general.

Sewerage Collection and Treatment

At present the Larnaca plant has a capacity of 8,500 m³/day. The treated water irrigates green areas and fodder crops near Dromolaxia. The aim of the Ministry of Agriculture is to use the water from the expansion of the plant to augment the supply of Kiti irrigation area, as there are severe shortages of supply. The water is salty from ground water intrusion in the collection system and needs desalination.

According to the relevant EU directive the new sewerage system for 28 villages including the whole Southern Larnaca Coastal Area has to be built during 2009-2012. This system will probably include also some coastal settlements in direction Limassol (Softades and Mazotos). Larnaca plant will also be expanded soon and cover the areas of Meneou, Dromolaxia, Kiti, Perivolia, as well as areas on the eastern side of the Larnaca town. The capacity will reach 17,000 m³ /day by the year 2020.

Having in mind this investment and the level of environment protection, sewerage system also should not function as a limiting factor for carrying capacity. The additional reason is a fact that Cyprus as a part of European Union and developed country has higher environmental standards than the countries in the near vicinity (Turkey, Egypt, Syria). Therefore Cyprus is in a position to offer a tourism product of higher environmental value and therefore more competitive than the neighbouring countries with bigger environmental problems considering their economical power and high population density.

Energy Resources

Energy in Cyprus is almost 100% generated by the Electricity Authority of Cyprus (EAC). Three electric generation plants exist in Cyprus: the Moni Power Generation Plant, The Vasilicos Power Generation Plant, and the Dhekelia Power Generation Plant. Vasilicos Power Generation Plant is the newest of the three. Power consumption in Cyprus has been rabidly rising and in the summer of 2007 reached its peak. The power capacity generation was almost exhausted during this summer and Electricity Authority of Cyprus has made plans for increasing the capacity in the year 2008.

The CO_2 emissions from the power plants are control with a special permit issued by the Ministry of Agricultural, Natural Resources and Environment. It is anticipated that during the next planning period of 2008 to 2013 the CO_2 emissions rights assigned to EAC will be exhausted because of three major reasons which are the following:

- Increases in power demand;
- Delays in implementing other method of electricity production that do not emit CO_2 (wind parks, solar panels);
- Delays in the construction of the necessary facilities that are required to use natural gas in electricity production.

If the emission rights are exhausted then EAC will have to purchase rights from other facilities throughout Europe at a very high cost to the consumer, from an international system that has been established for the trading of CO_2 rights. That can produce serious problems regarding carrying capacity both in energy and water consumption sector.

The lack of potable water sources has let the Government of Cyprus to the decision of constructing two desalination facilities (one in Larnaca and one in Dhekelia). One more desalination facility is planed for construction in 2008 in Limassol Area and possibly a second one in Paphos Area in the near future.

The construction of the desalination facilities is considered a necessity because of the rising demand of potable water in the cities of Cyprus and because of the high rate of construction development that is continuously approved in various areas of the island. The desalination facilities are one of the major electricity consumers in the island and their indirect contribution in CO_2 emissions one of the highest among other electricity users.

Other Forms of the Pollution of the Environment

The general state of environment in Larnaca District can be considered as good considering the solutions in sewerage collection and solid waste treatment, but there are some zones where environment is in less favourable condition. Such zones mainly refer to the town of Larnaca with large port and industrial facilities (petrol industry) and generally high congestion with buildings.

Outside the town of Larnaca the main problems regarding pollution of environment in coastal areas are cement factory and Vassiliko power plant near Zygi and military facilities in the British Sovereign Base Area belonging to the Larnaca District. In some areas the road infrastructure is located very close to the coastline, which is not very suitable solution from the environmental point of view. This is especially the problem in the vicinity of Larnaca town and to the east, and in southernmost part of the District close to the border of Limassol District.

Special problem is Larnaca International Airport as the largest on Cyprus with more than five million passengers per year, located on the coast. On one hand this is important form of environmental pollution considering the large built up facilities and high volume of air pollution and noise considering the large number of aircrafts. On the other hand, the very close vicinity to Airport and the exposure to noise has prevented the nearby coastal areas from building and probably encouraged the process of putting nearby Salt Lake under protection.

Transportation

The general situation with traffic network is very good, as mentioned before, considering the central position of Larnaca town between Limassol and Famagusta districts, the shortest distance to the capital Nicosia in the hinterland and the location of the International Airport. About 5 Km to the northeast from Larnaca is one of the main motorway junctions on Cyprus with three main directions: to the capital Nicosia to the north, to Limassol and Paphos to the west and Agia Napa and Paralimni to the east.

There are also two motorway connections of 5 Km each, one from the central Larnaca town to the main coastal motorway Paphos – Agia Napa, and the other from the International

Airport. All motorways were constructed away from the coastline, which is therefore not exposed to the pollution caused by dense traffic.

Considering the location of the International Airport and the motorway junctions, the Southern Larnaca Coastal area is therefore very well connected with the rest of Cyprus and the World. The main road servicing the coastal area is also located away from the coast with local connections to the main road, which is favourable from the environment point of view. Therefore is interesting that the most isolated part of coastal study area is the one belonging to the town of Larnaca near the International Airport, which is connected with the Larnaca town centre only through Meneou village.

3.5 Basic Demographic and Economic Data about Larnaca District and Southern Larnaca Coastal Area

Larnaca District is from all districts of Cyprus the closest to the average of Cyprus regarding population density and change of the population. The population density is 122 inhabitants per sq Km and the population change 11.1% between 2001 and 2005. The other demographic indicators are also close to the average, like the share of population by sex (49.1% males in the whole Cyprus and 49.3% in Larnaca district) or slightly better.

For example, the share of young population (0-19) for Cyprus was 29.4% according to the census of 2001, and for Larnaca District 31.5%. The share of older population is also showing more desirable values in Larnaca District: the share of population of 60 years and more was 15.5% in Larnaca District and 16.1% in Cyprus.

On the other hand, main tourism areas of Cyprus have much larger share of younger population – Paphos District 29.9% and Famagusta District 33.1%, but this is the result of specific need for labour in tourism industry. Significantly smaller share of urban population in Larnaca district (61.3% in comparison with 69.9% for the whole Cyprus) is therefore an indicator of good demographic conditions in rural areas.

Table 7: Educational Level of the Population of Larnaca for 2006 (Above 15 Years Old)

Level of Education	Urban areas (%)	Rural Areas (%)	Total (%)	
			Larnaca District	Cyprus
Never finish elementary school	5.8	9.5	7.3	8.5
Elementary school	16.1	29.3	21.2	20.6
Three years high school	15.4	17.6	16.2	13.0
Six years high school	34.8	32.4	33.9	35.3
College	27.8	11.2	21.4	22.6

Source: *Statistical Service of the Republic of Cyprus*

Good demographic conditions for Larnaca District are evident also in the educational structure. According to the data in Table 7, the share of persons never finishing elementary school and share of persons finishing six year high school or college is in Larnaca district slightly lower than the Cyprus average, and the share of those finishing elementary school or three year high school is higher. So, the share of uneducated people is very low and the slightly higher share of people with higher education is probably caused by fact that those persons mainly live in Nicosia as the capital of the country with all the government institutions.

Although there were no data about the share of foreigners and/or immigrants by districts, it can be presumed that their share is higher in the areas with high tourism importance. Having in mind that Cyprus has no records of problems with immigrant population even in the areas with strong concentration of tourism, it can be decided that the growth in number of foreign workers due to tourism development cannot produce serious conflicts regarding carrying capacity.

There were no data about the economy of Larnaca District in comparison with the other districts, but according to the available information the economical situation is probably similar to the average of Cyprus. Considering much larger share of tourism in the economies of other districts (especially Famagusta and Paphos) from demographic point of view there are probably no serious limitations for tourism carrying capacity.

3.6 Main Tourism Development Patterns of Larnaca District and Southern Larnaca Coastal Area with Respect to Tourism Carrying Capacity Assessment

The coastline of the area (both Larnaca district and smaller study area) is sandy-rocky, with some fine sandy beaches exposed to open Mediterranean Sea. There shoreline is not very indented – there are practically no real bays and only few more exposed capes, from which is the most important cape Kiti in study area.

Table 8: Beach Area in Larnaca District

Area	Sandy beaches (m^2)	Mixed quality (m^2)	Total	Estimated capacity / persons
North Larnaca coastal area including Larnaca Town (up to Mackenzie beach and Airport area)	185,000	0	185,000	23,125
Meneou – Kiti peninsula	55,500	72,000	127,500	14,138
Kiti – Zygi	23,750	195,000	218,750	22,468
TOTAL	**264,250**	**267,000**	**531,250**	**59,731**

Note: *For sandy beaches the standard of 8 persons per m^2 is adopted. For mixed quality beaches the standard of 10 persons per m^2 is adopted.*
Source: *CTO Tourist Development Study / CCA analysis, 1986*

Since the coastal zone in Larnaca District is also mostly flat or slightly hilly, it is therefore very suitable for beach use. The only exceptions are zones used for other activities more aggressive for the landscape like industrial zones (especially petrol refinery in Larnaca and cement factory and The Vasilliko Power Generation Plant near Zygi), as well as Larnaca International Airport. The majority of the coastline is also very easy to access, because its hinterland is used for agriculture.

Table 9: Arrivals in Licensed Accommodation Establishments by District

Year	*Agia Napa /Paralimni*	*Larnaca*	*Limassol*	*Nicosia*	*Hill Resorts*	*Paphos*	*Total*
2002	864,194	243,342	465,784	81,011	76,052	686,378	**2,416,761**
2003	760,105	236,314	445,162	72,795	64,403	652,676	**2,231,455**
2004	693,275	195,810	443,942	98,327	78,704	676,784	**2,186,842**
2005	724,354	217,543	405,041	92,540	71,463	707,845	**2,218,786**
2006	732,972	221,522	401,901	97,135	72,693	761,006	**2,287,229**

Source: *Cyprus Tourism Organization*

Therefore, it seems that the most of the coastline in Larnaca District and Southern Larnaca Study Area is very useful for tourism purposes, both regarding building and the usage of beaches. On the same time Larnaca district is underdeveloped in tourism terms in comparison with other parts of Cyprus. It is visible from the tables 9 and 10 showing Larnaca district being about five times weaker regarding the number of guest nights than much smaller Famagusta District (Agia Napa/Paralimni) and Paphos District and two times than Limassol District.

Table 10: Guest Nights in Licensed Accommodation Establishments by District

Year	*Agia Napa /Paralimni*	*Larnaca*	*Limassol*	*Nicosia*	*Hill Resorts*	*Paphos*	*Total*
2002	6,378,028	1,184,100	2,867,989	220,124	157,001	5,352,105	**16,159,347**
2003	5,557,582	997,061	2,519,112	182,106	137,529	5,064,547	**14,457,937**
2004	5,619,138	1,107,928	2,418,046	219,375	153,305	5,199,477	**14,717,269**
2005	5,969,005	1,196,689	2,339,288	215,286	145,500	5,192,551	**15,058,319**
2006	5,717,162	1,102,203	2,128,697	251,881	149,540	5,089,109	**14,438,592**

Source: Cyprus Tourism Organization

The average length of stay in Larnaca District, as well as in Limassol District is shorter in comparison with other coastal areas – it is about 5 days in comparison with 8 days in Agia Napa/Paralimni area, 7 days in Paphos District and 6 days in Cyprus as a whole. Larnaca District has also specific structure of nationality of tourists, being more diverse than other coastal areas with absolute dominance of United Kingdom district. In Larnaca District not a single nation is representing more than 20%, with three most important nations being Germans (19%), United Kingdom (18%) and Russia (9%).

Another element showing specific position of Larnaca is the structure of accommodation, with the largest share of two star hotels (23%) than anywhere else in Cyprus (8% total). Larnaca District is specific also regarding very small share of first class accommodation, having only one five star hotel (22 on Cyprus), only two A class hotel apartments (61 on Cyprus) a not a single Tourist Village (22 on Cyprus).

The general conclusion is that Larnaca District is relatively undeveloped in tourism terms, classified fourth among the five districts in the Republic of Cyprus (the fifth district is Nicosia with very short coastline). The quality of tourism offer is also lower, because proportion of beds in lower order or category of tourist lodgings is in Larnaca District bigger than in all other coastal districts, and proportion of higher order is much smaller.

Table 11: Guest Nights in Licensed Accommodation Establishments by Nationality and District

Guest nights 2007	Agia Napa /Paralimni	Larnaca	Limassol	Nicosia	Hill Resorts	Paphos	TOTAL
United Kingdom	2,492,160	200,027	956,056	28,415	12,668	3,678,366	7,367,692
Germany	489,252	213,355	97,393	12,498	8,948	363,876	1,185,322
Russia	322,762	95,690	336,752	5,247	1,134	65,500	827,085
Sweden	644,108	61,454	8,509	2,800	270	14,171	731,312
Norway	435,566	19,321	8,310	817	369	5,025	469,408
Other foreign countries	995,897	426,644	557,799	166,136	13,629	569,333	2,729,438
Cyprus Residents	337,417	85,712	163,878	35,968	112,522	392,838	1,128,335
Total	**5,717,162**	**1,102,203**	**2,128,697**	**251,881**	**149,540**	**5,089,109**	**14,438,592**

Source: *Cyprus Tourism Organization*

Furthermore, the already small number of tourism beds was additionally reduced in the period after year 1995 due to the lack of sufficient work in order to upgrade environment (especially in the Gulf of Larnaca with large Petrol Refinery) and lack of incentives for tourist growth. Negative influence on tourism development was also caused by the make of big number of built-up lodgings, which created illicit competition to the approved existing tourist units.

The structure of tourists (very diverse, although the total number of tourists beds is small) as well as relatively short average length of stay is indicator of the lack of clear orientation of tourism product. That is different from Agia Napa – Paralimni area oriented mainly towards youngsters and Paphos oriented towards families. Nevertheless, it is interesting that in the last five years Larnaca District did not show serious decrease in the number of tourist nights like (relatively similar) Limassol District or Paralimni area.

Considering the total number of overnights and all other characteristics of tourism supply and demand it does not seem that tourism development of Larnaca District has a clear future vision. The existing plans for Larnaca District regarding tourism confirm afore mentioned statement. In those plans many some forms of hotels and similar establishments are included, but that concerns mainly construction of Urban Small Hotels, which is at the same time smaller than construction of secondary residences.

For the Southern Larnaca Study Area it is stated that bbecause of the particularity of her place, the character of buildings will generally be supposed to respect the sensitive environment of region. It includes measures such as the placement of buildings in order that are ensured essential optical escapes to the Salt lakes and the sea and is not created in any point big over-concentration. In case of construction of hotels this will be 2 floors, except in the case of his communal spaces, where this department of hotel could be 3 floors. Plot generation in this region for aims of construction of residences will not be allowed.

Regarding carrying capacity assessment it is therefore important to point out that Larnaca District is generally seen as not especially important tourism area, as well as less attractive area for tourism development than other coastal areas of Cyprus. Therefore the ideas for future development are on low scale and are more oriented towards building of secondary residences, still often seen on Cyprus as more sustainable form of development than development of hotels and similar establishments.

3.7 Socio-Cultural Problems

The structure of population and relations between domestic population and foreign labour on Cyprus and especially in Larnaca District do not show any serious threats in socio-cultural area regarding tourism carrying capacity. In other words, if no serious conflicts exist in Agia Napa – Paralimni area with much higher concentration of tourists and foreign workers vs. local inhabitants than it will ever happen in Larnaca district, there is no ground for foreseeing socio-cultural conflicts as a limiting factor for carrying capacity.

Eventual problem can arise in socio-cultural sphere only regarding secondary residences, if there will start to be seen as a dangerous form of development destructive for the local resources. Considering a fact that building of secondary residences is at the moment not seen as a socio-cultural issue, but as the choice made by decision makers on national level, that problem will be discussed together with the issues dealing with the political economy of Cyprus.

3.8 Political Economy of Cyprus and Larnaca District and Its Effects on the Study Area

According to the available information in Cyprus as a relatively small state the political decisions regarding development are taken in Nicosia, with very small responsibilities on district level. The actual trends see coastal part of Larnaca District as less attractive for investments in development of hotels and similar establishments and therefore this area is seen mainly as an area designated for the development of secondary residences.

Although in many Mediterranean countries secondary residences are seen as extremely unsustainable form of tourism development due to one-time use, permanent occupation of coastal belt and very few new working places produced, according to the available information it is not a case in Larnaca District, at least not to such a large extent as in other parts of the Mediterranean.

The reasons for such a benevolent view regarding secondary residences in Larnaca District can be explained by:

- Both the constructors and the owners of secondary residences are Cypriots, so the income in construction business stays in Cyprus and the socio-cultural picture is not changed (especially because Republic of Cyprus as relatively small state does not have serious regional differences between their citizens, like in most other countries);
- The zones for building are relatively well planed in comparison with many other countries in the Mediterranean and the majority of secondary residences have from the local point of view generally acceptable appearance; therefore from the outside they look less dangerous for the environment than usually much larger hotels and tourist villages;
- The interest groups involved in the process of building of secondary residences are strong and influential, especially the construction companies and Cypriot citizens buying those houses, coming predominantly from Nicosia and its environs.

Nevertheless, some stakeholders have noticed the potential strong negative impact of such process. The most important is Association of Cyprus Tourist Enterprises, considering the phenomenon of enormous growth of building secondary residences very serious. According to their view this process negatively influences the legal hotel industry of Cyprus and is emphatically an unsustainable form of development, causing environmental and socio-cultural negative impacts.

Having in mind that the ratio for the capacity of holiday homes as opposed to hotel establishments is probably the crucial element for the total carrying capacity of the Southern Larnaca Coastal Zone and Larnaca District in general, this view is presented here in the original form:

“The continuous large and uncontrolled increase of tourist residences /secondary homes, which are in most cases characterised by low qualitative levels and unattractiveness, undermines the legal hotel industry. Thus, the increase of these developments debases healthy competition but also creates an unfavourable image of Cyprus as a quality destination. According to official data by the Statistical Service of Cyprus, it is estimated that around 30% of tourist arrivals do not stay in licensed accommodation establishments.

The tourist arrival numbers may therefore show an increase at a certain period of time, but hotels’ overnights and occupancies might be declining. This problem is expected to accelerate in 2-3 years since approximately 40,000 new beds would be added from new golf

courses and approximately 10,000 from tourist residential development surrounding marinas, plus thousand more beds which are continuously added due to this dramatic increase of tourist residence construction.

The Association of Cyprus Tourist Enterprises suggests that this misruled growth of tourist residences is ceased:

- with the integration of these specific developments in a national land plan; and
- regulating the size and other characteristics of appropriate and desirable units/homes, ideally accompanied by essential tourist services, and in proportion/relation to the natural environment.

The construction of tourist residences has been regulated in Spain and France – both eminent tourist countries – from which examples should be drawn. In Greece, a new legislation specifically addressing the matter is now being promoted".

Although some other elements of carrying capacity, especially those concerning availability of water and energy resources indicate potential threat to the study area, they can be considered as a part of the carrying capacity of Cyprus as a whole. In other words, the problems of ratio between secondary residences versus hotels and similar establishments represent the most important element of carrying capacity of the particular area of Southern Larnaca coastal zone.

4. Data Synthesis

4.1 Issues of Environmental Protection

According to the data obtained from the Ministry of the Interior of Cyprus – Department of Town Planning and Housing, National policy concerning the environment is formulated and implemented by the Environment Service of the Ministry of Agriculture and Natural Resources and the Environment. Other government agencies may also be responsible for specific areas, such as the Department of Forests, and the Fisheries Department within the same Ministry, the Game Fund Service within the Ministry of the Interior, the Department of Work Inspection for air quality etc.

Spatial ramifications of environmental policy are expressed both through the designation of protected natural areas, as well as through control procedures in place for the approval of various types of development, including industry, mines and quarries and so forth, in order to meet environmental quality objectives. Thus, all such development is bound by published approval and implementation procedures to establish its possible impact on the environment, involving consultation with competent authorities as indicated. To assess the impact of urban policy itself on the environment, the precepts of Strategic Environmental Assessment are currently being incorporated into the planning system.

Department of Town Planning and Housing is also responsible for the Conservation Policy and conserving the island's architectural heritage is one of the most important missions of this department. In addition to the formulation of area-specific integrated conservation policies within each Development Plan, often accompanied by sets of restoration and intervention guidelines according to local parameters, the Department independently promotes an active programme of incentive provision for the rehabilitation of listed buildings and structures by the private sector.

Based on the provisions of the 1972 Town and Country Planning Law, as well as legislation concerning the establishment of a Special Conservation Fund, the package of incentives currently available to owners includes, in addition to direct grants that cover up to 50% of the acknowledged restoration cost, generous tax deductions, such as exemption of restoration costs and rents obtained thereupon from income tax, refund of property transfer fees and exemption from the property tax, as well as transfer of development rights, that is of the remaining unused permitted plot ratio of listed properties within urban regions to specified commercial and tourist areas.

The newest in a spectrum of thematic policies addressing issues of natural and cultural heritage include Landscape Policy. Although a landscape protection policy had been included in the Policy Statement for the Countryside since the early 1990s, an updated policy on the protection, management and planning of landscapes, based on the Florence Convention, is under preparation for inclusion in the revised Policy Statement for the Countryside.

In a similar manner, a wide spectrum of other spatial policies is integrated within Development Plans, where appropriate. Such policies concern sports and recreation, cultural infrastructure, antiquities and archaeological sites, public utilities, public works, mines and quarries, specialised development, development outside designated areas and so forth.

For the Southern Larnaca Study Area very important document was a study for the protection and improvement of the coastal sections of Kato Pyrgos Tillirias, Polis Chrysochou and Zygi – Kiti in 2000. The study was prepared by the Ministry of Communications and Works, Public Works Department, in cooperation with the National Technical University of Athens. Within the framework of this study for Zygi – Kiti area, detailed designs were prepared for Perivolia Bay, with a length of 13 Km from Cape Petounda to Cape Kiti.

Through an engineering estimate of the changes in coastline position between the years 1973 and 1993, using air photographs and photogrametric analysis, it has been estimated that the coastline erosion is in the order of 10m. Locally the greatly notable recession of the coastline reaches up to 25 m. The main cause for this erosion rate appears to be the massive beach quarrying for usage at the building industries, the construction of river dams and the rabid development of the coastal area. The beach quarrying was prohibited by law during the decade of the 70's.

Figure 6: Beach Area in Resort Near Alaminos (Photo: Z. Klaric)

The detailed designs prepared by the National Technical University of Athens, proposed to construct 15 parallel breakwaters from natural rocks with 150 meters length each and crest level at +0.25 meters. Their average distance from the shore will be 250 m.

The mathematical model MIKE 21 was used to study the influence of coastal engineering aspects due to the construction of the breakwaters. The average erosion rate in all the length of the coastline, without the breakwaters is expected to be 0.2 meters per year. With the construction of the breakwaters is expected that coastal erosion will be eliminated. On the other hand, it is not expected the creation of long/extended sandy beaches.

In spite of afore mentioned suggestions, the artificial creation of sandy beaches sufficient for tourism development already started, as seen in one of the rare existing tourism villages in Larnaca district near Alaminos. Therefore the future creation of similar beach areas can be considered as possible in other parts of the District, including the study area.

Since due to a necessity of constant maintenance such constructions can be economically feasible only as a part of hotels and similar establishments (and not secondary residences) it is not likely that there be many of them in the area. Therefore a general view of coastal areas in Larnaca district (especially towards the south) as natural zone is easier to maintain, especially considering existence of a large protected area near Larnaca airport.

4.2 Land-Use Planning Policy and Development Implications

For the planning process in Cyprus the most important issue is the existence of the three-tier hierarchy of Development Plans introduced by the 1972 Town and Country Planning Law established by the Ministry of the Interior – Department of Town Planning and Housing. This system is implemented today and is based on the concepts of:

- the “Island Plan”, which refers to the national territory and the regional distribution of resources and development opportunities;
- the “Local Plan”, which refers to major urban areas, areas of exceptional importance or areas undergoing intensive development pressures and rapid physical development; and
- the “Area Scheme”, at the lower end of the hierarchy, which in general refers to areas of a smaller scale and is more detailed and specifically project oriented.

Such scheme exists in the most other developed countries in the Mediterranean, the only difference being a fact that on Cyprus the regional (district) level does not have a separate position in the planning process. Such a view can be justified with a relative small scale of Cyprus as a state, but it has to be mentioned that in the most countries in the Mediterranean territorial units of the similar size as Cyprus districts have separate plans for this (regional) level.

For all territory where neither a Local plan nor an Area Scheme is in force, an additional type of development plan was introduced to the planning system in 1982. This is the Policy Statement for the Countryside (PSC, a legally binding document in the form of an adapted regional plan for the control of development and the protection of the environment in villages and rural areas. Along with this document, a series of zoning plans have been published for the majority of rural settlements, while areas of outstanding natural value, selected coastlines and nature protection areas, as well as areas of protected landscapes are all delineated on a detailed cadastral inventory which complements the guidelines of the Policy Statement for the Countryside.

The inability to implement an Island Plan due to the forced division of Cyprus has led the Government to prepare and publish the Policy Statement for the Countryside, which refers to all government-controlled territory, except areas where a Development Plan is already in place. In certain cases, areas with a high development momentum, such as some of the most intensively developed tourist resorts, are also covered by the PSC.

The PSC, however, is not a regional development plan, in the sense that, a Local plan is. It rather defines land use zones for most rural settlements and communities and areas of special or exceptional natural or environmental value. It also specifies a framework of location policies for a wide spectrum of development types, including residential, commercial, tourist, industrial, agricultural etc. Local Plans and the PSC comprise a Written Statement and a series of Maps showing:

- The allocation of land for the main land uses (agriculture, housing, commerce, industry, public open space, education, health centres, public buildings, etc.);
- The designation of site-specific land use zones and the applicable building coefficients (plot ratio), height limitations and site coverage.

Policies included in the Larnaca Local consist of many general goals expressed through thematic policies, such as Housing, Transportation, Commercial, Industrial, Agricultural, and afore mentioned Environmental, Conservation and Landscape policy.

Housing Policy

Some of the main provisions of urban housing policy address the designation of areas for residential development, their differentiation according to development densities, building heights and floor areas permitted, the elaboration of parameters concerning non-residential uses considered compatible with residential ones and the requirements under which such uses may be permitted, as well as the provision of incentives to promote specific housing policy objectives, such as the encouragement of integrated residential development.

Transportation Policy

This is formulated in cooperation with other competent Government agencies, including the Public Works Department and other services of the Ministry of Communications and Works, partly through the deliberations of a national ad hoc umbrella committee for the examination of traffic problems. This has become necessary since transportation networks at the national, regional and local levels fall under the jurisdiction of various authorities.

Thus, transportation policies formulated within Development Plans have become an invaluable tool for the coordination and integration of all relevant policies at local and conurbation levels. Transportation spatial policy is expressed through the designation and publication of a hierarchy of primary, secondary and tertiary road networks to which several other spatial policies correspond, the formulation and implementation of traffic management and public transport policies, as well as through the designation of adequate parking, pedestrian and bicycle routes.

Commercial Policy

Considering the predominance of the tertiary sector in the economy, commercial spatial policy is directed towards two main objectives: On one hand, the efficient allocation of commercial activity in a multi-centred urban system based on market dynamics, and on the other hand, the protection of public amenities and the image of the urban environment from the negative impacts of commercial development.

Specific policy measures and provisions are in place for the Central Business District, several designated Regional Retail Centres, three distinct types of Activity Corridors, Local Retail Centres and historic urban cores in satellite towns. The same refers to the organisation and location of specialised retail development, in particular that of department stores, commercial complexes and hypermarkets. Moreover, this policy contains measures and provisions that address the infiltration of retail uses in non-commercial areas, the location of convenience stores at the neighbourhood level, the organisation and location of office space, the location of petrol stations etc.

Industrial Policy

With the gradually diminishing economic importance of the secondary sector and in view of its inherent structural weaknesses, industrial spatial policy expresses not only the need for the protection of public amenities and the environment, but also the priorities and objectives of the government Strategic Development Plan, the current industrial policy of which is based on the attraction and development of high technology industries, the restructuring and support of existing industries, the improvement of productivity, and the attraction of foreign investment.

To this effect, measures and provisions have recently been introduced in relation to Research and Development Centres and enterprise incubators, through the designation of Mixed Zones of Industrial and Commercial Activities. Industrial development is already categorised according to its environmental impact and is constrained, where indicated, within designated Industrial Areas. Specific sets of additional provisions cover workshops, warehouses and high-tech development, while measures are stipulated for the upgrading of the urban environment within existing Industrial Areas and the protection of adjacent non-industrial uses.

Agricultural Policy

This policy does not feature prominently within spatial plans for the main urban areas, although there are specific and stringent provisions for the location of animal and poultry farms, abattoirs etc. On the contrary, in spatial plans for quasi-rural municipalities surrounded by large agricultural areas, as well as in the Policy Statement for the Countryside, relevant spatial policy integrates the agricultural policies of the Ministry of Agriculture, Natural Resources and the Environment, concentrating on the protection of prime agricultural land and irrigation resources.

Figure 7: Secondary Residences in Open Field Near Perivolia (Photo: Z. Klaric)

For the study area especially important are the housing and agricultural policies, because of the interference with the tourism activities regarding use of space. But considering the actual circumstances in the area it is evident that tourism is winning the game regarding space usage against agriculture. To be more precise, tourism in form of secondary residences is expanding on the fields day by day, what is evident even from the visual point of view.

4.3 Tourism Demand and Development – Choices Relative to Tourist Development Based on Hotels and Similar Establishments and Development Based on Secondary Residences

Due to the significance of the tourism sector to the economy of Cyprus, tourism spatial policy expresses not only the need to control the undesirable side-effects of mass tourism development, but also the priorities and objectives of the government Strategic Tourism Plan. This Plan is prepared by the Cyprus Tourism Organisation in consultation with a wide spectrum of stakeholders. Its objectives and priorities are based on the attraction of quality tourism with longer stays and higher spending, the increase of tourist arrivals, the improvement of seasonality and the diversification of the tourist product, including further development of special interest tourism.

Consequently, apart from basic functional and organisation concerns for tourist establishments, tourism spatial policy provisions address the control of intensity and quality of tourist development, the integration of amenities in tourist area design considerations and the improved integration of these areas into the overall urban fabric. They address as well the encouragement of tourist product diversification through the promotion of a healthy mix of uses in tourist areas.

Relevant measures and provisions also cover the designation of tourist zoning in coastal areas, the conditions for the mix of uses, location and organisation requirements for mixed use destination resorts, conditions for the tourist use of architectural heritage, conditions for the permission of retail, recreation and entertainment development within tourist areas etc. Tourism development is governed by specifically formulated basic design parameters and is bound by a set of published approval and implementation procedures with the involvement of the Cyprus Tourism Organisation at various stages.

The main problem in the implementation of such policies is a fact that decisions are made centrally, with very few possibilities of action on local level. It is clear from the fact that those issues are regulated still from the 1972 Town and Country Planning Law. This Law does not clearly specify procedures for promoting active public participation in the planning process, but it specifies how the public may influence the provisions of a Local Plan or Area Scheme at two stages.

In the first instance, the public is involved at the plan-making stage. Stakeholders participate in the Common Board and include representatives of the Local Authorities involved, government agencies and public bodies whose policies are affected by the plans under consideration, organised citizens' groups and NGO's with an interest in the area under study, as well as persons of special knowledge or expertise in relation to the study area. This process is essentially consultative and its main objective is to inform the Minister on opinions and suggestions in relation to a Development Plan's current or proposed policies.

Figure 8: Beach in Protected Area Near Larnaca International Airport (Photo: Z. Klaric)

After its approval by the Planning Board, a Development Plan is published, put on deposit and at the same time implemented. Local Authorities, NGOs, or any interested body or individual may thereafter submit objections against any of the plan's provisions within 4 months of its publication date. The responses are then studied by the Planning Board and suggestions for possible modifications are then submitted to the Minister of Interior. Public Hearings may also take place during this period, allowing any interested parties to express their views.

The Minister examines the proposals made by the Planning Board, submits his suggestions for amendments and remarks to the Council of Ministers for considerations and decisions, and eventually publishes the Approved Development Plan, which remains in force until its following amendment.

As far as the Policy Statement for the Countryside is concerned, the public is involved once the Statement has been placed on deposit and implemented and has the right to submit objections and representations for a period of 8 months. The responses are then studied by two separate Councils, depending whether the objections regards the land use zone or planning policies, and suggestions for possible modifications are then submitted to the Minister of Interior. The Minister examines any objections, submits his suggestions and remarks to the Council of Ministers for considerations and decisions, and eventually publishes the Approved PSC, which remains in force until its following amendment.

Through these processes, in many instances local ad hoc pressure groups and NGOs have raised issues and questions, which directly relate to spatial planning policy. Political pressure has thus had considerable effects on the implementation of several provisions of published Development Plans.

For the choices relative to tourism based on hotels and similar establishments and to tourism based on secondary residences as a crucial element of carrying capacity, such public

participation is not adequate. This is caused by a fact that there are no capable and powerful subjects on regional/local level who can actively participate in planning process due to lack of institutional power in districts. It was illustrated by the absence of local stakeholders in the preparation of this document, but also by the very pointed reaction of The Association of Cyprus Tourist Enterprises, whose standpoint was evidently not taken seriously into account.

The standpoint of The Association of Cyprus Tourist Enterprises was proved as a fact in many other Mediterranean countries, especially in Spain and France and recently in Croatia and Greece. According to the recent experiences in Croatia, practically all tourism destinations facing strong growth of secondary residences are showing much weaker results in the number of guest nights than destinations where secondary residences were not built in large extent. Such tendencies are very clear also from the carrying capacity point of view, because pressure from the secondary residences on the tourism resources disqualifies attempts for development of hotels and similar establishments. It also diminishes effects of existing establishments due to degradation of existing tourism resources through increased pressure on the coastal areas, especially beaches.

Therefore the development of secondary residences is beneficial only in degraded and unattractive areas, where development of hotels and similar establishments is not possible. Since coastal areas in the Mediterranean are in general considered as attractive, this sort of development is usually acceptable only far from the coastline and in hinterland, especially in the areas exposed to depopulation.

4.4 Synthesis of the New Situation and Possible Alternative Approaches to Tourism Development for Larnaca District and the Southern Larnaca Coastal Area

The analysis of the groups of parameters and indicators for carrying capacity has shown special importance of indicators covering political economy. This is caused by the fact that both physical-ecological and socio-cultural indicators are not showing that tourism carrying capacity is seriously limited. There were some indicators in the infrastructural area possibly important for the carrying capacity, but they are more relevant for Cyprus as a whole, and not to Larnaca District (water and energy consumption).

There are two main reasons for afore mentioned statement:

- the coastal zone in Larnaca district does not have high environmental value (except in a small area near the Airport); and
- the coastal zone is already partly devastated by industry both in smaller Southern Larnaca Study Area (desalinization plant and sewerage treatment facility) and in the rest of district (petrochemical and cement industry, power stations, large port facilities)

Therefore, tourism development in Larnaca District and Southern Larnaca Coastal Zone replacing industry can generally function as a tool to improve the state of environment.

The infrastructure is not a limiting factor for the study area because the key communal infrastructural objects (water desalinization plant, waste water treatment station and Larnaca International Airport as the most important on the whole Cyprus) are located in the study area. At the same time tourism in Larnaca district is considered as relatively small burden to this infrastructure compared to tourism in neighbouring districts of Limassol and Famagusta.

The situation in socio-demographic area is also not a limiting factor for tourism development, because all socio-demographic indicators concerning ratios between tourists and local population for Larnaca District and especially Southern Larnaca study area are much more favourable than in the main tourism area of Cyprus in Agia Napa – Paralimni area, as well as in Paphos area. The situation is even better regarding socio-cultural issues, because Larnaca area is more urbanized and therefore less sensitive to socio-cultural aspects of carrying capacity than more rural areas in Famagusta and Paphos district.

Considering this situation the possible alternative approaches to tourism development for Larnaca district and the southern Larnaca coastal area are mainly concerning the distribution of two most important types of development: hotels and similar establishments capacities and secondary residences. Therefore two main options should be Continuation of existing trends based on intensive building of secondary residences and Alternative tourism option with an accent on protection of natural areas. Sustainable tourism development option should find the compromise between those two, and the remaining option of development of hotels and similar establishments based on the model of neighbouring areas in Agia Napa and Limassol is only stated in order to illustrate the possible scenario for most other coastal areas of Cyprus. Nevertheless, this option is not very likely in Southern Larnaca Coastal Area.

5. Tourism Development Options

5.1 Continuation of Existing Trends Based on Intensive Building of Secondary Residences / Apartments in the Area

This option is very possible according to existing trends and can be quantified in line with existing data and professional comments. Continuation of existing trends will result in large income on short term, but the existing resource – coastline suitable for bathing and building of hotels and similar establishments – will be lost forever. Future income from the owners of the houses and their guests is not completely negligible (taxes, shopping in local shops and using local restaurants, staff necessary for the maintenance of the houses), but it is much smaller then from tourism based on hotels and similar establishments.

Therefore this option is considered as unsustainable, although it can be viewed as acceptable by local community considering their short term profits from selling land and actual decrease in the number of tourists in Larnaca District and neighbouring areas (especially Limassol District). Another weak point of this option is usually much higher density of people per sq m of land area and per meter of the beach than in case of tourism based on hotels and similar establishments.

According to the latest data the number of secondary residences was about 14,000 in the whole Larnaca District and more than 2,000 in the study area. If we calculate usual number of four persons per one secondary residence it is more than 50,000 people (beds) in the whole district and nearly 10,000 in the study area. Considering that this development will continue with the same growth rate, in the year 2010 there will be about 87,000 beds in the secondary residences in the whole district and about 12,000 in the Southern Larnaca coastal area. It is very important therefore to mention that the total number of beds in hotels and similar establishments in the Republic of Cyprus was only 92,529 in the year 2007.

Table 12: Secondary Residences in Larnaca District

	1982	1992	2002	2006
Pilot Case Study Area – Core rural coastal area				
Meneou	13	163	348	480
Kiti	37	95	216	
Perivolia	12	571	1,055	1,557
Sub-total I	***62***	***827***	***1,569***	***2,047***
Outside the Pilot Case Study Area Core				
Pyla	6	591	697	1,000
Oriklini	16	754	1,234	3,100
Mazotos	21	120	252	420
Zygi	15	211	250	450
Larnaca Municipality	1,837	3,547	4,780	7,000
Sub-total II	***1,880***	***5,223***	***6,961***	***11,520***
TOTAL LARNACA DISTRICT	**1,942**	**6,050**	**8,530**	**13,567**

Sources: *1982, 1992 & 2002 figures from Population & Housing Censuses and 2006 figures estimates by the Local Authorities*

Such numbers are above the pure physical carrying capacity of the area according to the basic calculations of the relation of the length of beach and possible number of users. Considering the existing calculations according to the Cyprus Tourism Organization (Table 8.), the total beach capacity of the study area is less than 20,000 persons, so the physical carrying capacity limit is already close. Even if we take into account the length of the whole coast in the study area and a possibility for the construction of artificial beaches it will probably not be possible to accept more than 30,000 people.

For example, in Agia Napa – Paralimni area as the most congested area of the whole Cyprus, there were 36,772 tourism beds in 2007, and minimum 30,000 beds in secondary residences (there were 7,373 temporary residences in 2001 in comparison with 12,699 in Larnaca District) on the 56 Km of the coastline. If we use the same ratio for the whole Larnaca District that will result in maximum of 95,000 people in the whole district and less than 15,000 in the study area.

Such a development could result in a fact that almost the whole coastal zone in Southern Larnaca Study Area study area will be covered with secondary residences, leaving free only those zones with protected area status, such as Salt lake area. Even those few hotels and similar establishments can in such circumstances attract primarily low class market and therefore result in smaller outcome regarding income and employment. Huge scale of such development will discourage eventual investors in hotels and similar establishments due to a poor image of the area caused by high concentration of people from secondary residences on the local beaches.

In such circumstances the logical proposal should be a strict rejection of option of continuation of the existing trends and usage of all possible measures to stop the continuation of issuing new licences for new secondary residences capacities, especially near the coast. Since the need for those capacities cannot be rejected in general, building of new secondary residences should take place in some areas where negative effects as above mentioned can be avoided.

Therefore, it is interesting that the majority of those houses do not have a view towards the sea, many are built far from the coast (in same cases more than one kilometre) and they still have good price on the market. So, different from tourism development based on hotels and similar establishments which in most cases need to be very close to the coastline, for the secondary residences it is not necessary. The solution should be (if it is not possible to stop such building completely), to limit the new construction of secondary residences to certain distance from the coast.

In that case the resources of the area will be saved, because areas close to the coastline can be used for development of hotels and similar establishments and therefore in a more sustainable way. On the contrary, if the construction of secondary residences will continue, it is not likely that there will be any future investors in development of hotels and similar establishments. In such case probably all available areas in the study area except those under protection will be covered with secondary residences, as shown in Figure 9.

Figure 9: Continuation of Existing Trends Based on Intensive Building of Secondary Residences

5.2 The Option of Development of Hotels and Similar Establishments Based on the Model of Neighbouring Areas in Agia Napa-Paralimni and Limassol

Future tourism development based on the model of neighbouring Agia Napa area is less possible than the previous model, but it cannot be completely excluded. The main reason for its low possibility at the moment is low attractiveness of tourism business on Cyprus in general considering investment return, especially in comparison with construction of secondary residences. Nevertheless, it has to be mentioned that some tourist establishments function very successfully, especially like the one near Alaminos, opened throughout the year unlike the most hotels in Agia Napa – Paralimni area.

Therefore, the option of development of hotels and similar establishments is on the long term more sustainable even in a case of prevalence of all inclusive tourism hotel development, representing a form tourism development with the minimum contact with the local social environment. The reason is a fact that such resorts produce permanent workplaces and have pure economic interest to care about the environment – to maintain the beaches for their guests, to plant greenery, to keep the infrastructure in good condition etc. It has to be mentioned also that due to actual need of such resorts for more opened spaces the density of tourism cannot be as big as in Agia Napa-Paralimni area, already showing decrease in the number of guest nights caused by maturity of their tourism product.

The most important negative aspect of development of hotels and similar establishments based on all inclusive resorts is a fact that this development mode leads to the formation of a tourist product which follows modern development standards (facilities, services, etc.), but is characterised by spatial and social isolation. Such “enclave resorts” often result in minimal economic benefits for the host community, due to their high leakage rate, their dependency

on international charter operations, the use of high imports and expatriate employees. But, they at least produce new workplaces, what is not a case with secondary residences.

In the study area the approximate spatial development of this option will probably tend to occupy primarily the space between Kiti peninsula and Tremithos river mouth, as well as areas south from the study area in Larnaca District until Petounta point near Mazotos. The reason is a fact that those areas are at the moment not covered with secondary residences and are usually far from the coastal road allowing isolation necessary for all inclusive tourism hotel development. Some plots near the Salt lake (outside protected area in Meneou) can also be interesting for the investments due to their higher environmental value than the plots in Perivolia and possibility for separation from the neighbouring holiday houses.

Figure 10: The Option of Development of Hotels and Similar Establishments Based on the Model of Neighbouring Areas in Agia Napa-Paralimni and Limassol

The existing examples have shown that tourism based on hotels and similar establishments in general needs more free spaces than the secondary residences. Therefore, its effect on carrying capacity is less dangerous than the option of the continuation of existing trends, but the possibility of such investments in the study area will be less likely if the number of secondary residences will reach high proportions.

5.3 Alternative Tourism Option With an Accent on Protection of Natural Areas

The option which will put an accent on the preservation of the Southern Larnaca Coastal Area and the rest of the coast up to Limassol district border is also not very likely, but cannot be completely excluded. Considering that the coastal strip between Larnaca airport and Zygi is one of the rare parts of the coast of the Republic of Cyprus which is still mostly not built up, it can produce strong ecological interest for the preservation.

The main problem is a fact that that overall ecological value of the majority of this coastline is not very high, so the arguments for putting it under protection is not easy to plead. This refers not only to the mainly agricultural areas towards Limassol, but also to the zone near the Larnaca International Airport and the Salt Lakes. Even this protected area is partly polluted with neighbouring Airport facilities due to noise and air pollution from the aircrafts, as well as to facilities for desalinization and waste water treatment. So, this area can thank its preservation status very probably to less attractiveness considering noise from aircrafts and existence of industrial facilities.

Salt Lakes protected area and some other will probably keep their role as a kind of buffer green and unspoilt areas for the town of Larnaca, but it is very likely that construction lobby will strongly oppose to the wide protection measures in the other parts of the coastline towards south. In other words, according the actual situation, the attempts to limit the tourism development in order to preserve natural environment in the area have no real chances to be realized in broader extent.

The limitation of tourism development can be contra productive also from socio-cultural and consequently ecological point of view. That can happen if the need for working places for the neighbouring rural areas in case of restrictions towards tourism will result in the introduction of industrial capacities and/or in housing close to the coastline.

Figure 11: Alternative Tourism Option With an Accent on Protection of Natural Areas

One of the solutions could be village-based tourism which will help to regenerate local communities, increase local income and local ownership and produce more jobs in tourism. But it is necessary to bear in mind that this type of the development has more chance in physically more attractive and environmentally better preserved hinterland than in study area, where landscape value from the tourist point of view is not very high.

In such circumstances the sustainable development of hotels and similar establishments cannot be seen as a threat, but more likely as a most efficient tool for protection of the environment. That role is a result of a direct economical interest of modern tourism development to:

- keep a narrow coastal zone as much as possible in natural condition, especially the most attractive areas;
- keep some parts of the wider coastal zone and adjacent areas completely intact due to a necessity to produce some buffer zones between the accommodation establishments (in order to increase their market value, because accommodation establishments surrounded by natural areas usually have higher economical value); and
- discourage environmentally unfriendly construction of secondary residences resorts, as their possible competitor reflecting to the most attractive parts of the coastal zone and a factor of decreasing their market value due to endangering the carrying capacity limits of the whole area.

5.4 Sustainable Tourism Development Option

Sustainable tourism development option can be considered as closer to an integrated approach, which takes into account positive aspects of the above mentioned scenarios, and reduced as much as possible the negative ones. Such option should therefore care about the ratio between hotels & similar establishments and secondary residences, in order to ensure enough work places in the area for the future and avoid high concentrations of hotels approaching saturation like in Agia Napa – Paralimni area.

The distribution of those two types of development should also care about the physical characteristics of the coastline and preferences of the local population. Therefore zones with nice beaches (especially near villages with shortage of attractive working places) should be more suitable for tourism based on hotels and similar establishments and less attractive areas far from the coastline for secondary residences.

For the alternative option it should be proposed to keep the already protected zone near the airport as a zone restricted from any kind of building and a part of a green belt of the town of Larnaca. It can be recommended to include some other small coastal zones under protection status, since they have positive impact on the complete image of a destination. That can be justified as a tool which can increase the income from tourism industry and the selling price of secondary residences. Possible forms of village-based tourism should be introduced where it is possible in order tol regenerate local communities and produce more jobs in tourism.

In this sense sustainable development has to be seen as:

- A development modality that considers carefully a regions need to use properly its natural resources for promoting a viable economic growth and socio-economic development; and
- A process that involves management and regulatory interventions to limit negative impacts of human activities on the environment and ensure that those damages incurred to the general good and welfare are not irreversible.

The basic premise underlying the sustainable tourism development option outlined below is based on the assumption that there exists an alternative mode of tourism development, different from the predominant tendency of building only secondary residences in the coastal area. Therefore it is necessary to promote a type of development mode through which tourism as an essential component of economic development and contributes to continuous economic growth without environmental deterioration or destruction.

Among the principles and goals of tourism's sustainable development the following most relevant ones to the study area are to:

- Select and promote tourist products and specific development objectives which are conducive to the diversity of the tourist product in the whole Cyprus;
- Maximise the economic benefits of tourism by providing the best interlinkages of coastal tourism to other sectors of the economy; and
- Secure and promote a symbiotic relationship between economic and ecological development parameters by enhancing the entire range of environmental assets.

The proposed structural diversity of the tourist product corresponds to a supply which differs from the existing absolutely dominant development patterns of secondary residences. This type should include more all inclusive tourism hotel development like in newly opened tourism resort near Alaminos[1] and only few small "classic" hotels. The proposed three product lines are strongly interrelated and their development depends on the primary resources needed and the correct timing and coordination of various policy measures in tourism. The sustainability of the proposed tourist product is therefore dependent on the parallel development of an appropriate tourist product.

With regard to a preliminary delineation of carrying capacity of the study area regarding physical – natural resources, its capacity assessment seems easier due to the generally fixed attributes of the elements constituting the parameter. Those results are even more important since the socio-cultural parameters are found not to present any serious obstacle to tourism development due to the position and overall development level in this area at the outskirts of Larnaca town.

The total physical carrying capacity broadly estimated on the basis of existing limited information[2] and assumed standards with regard to beach capacity and coastal visitors capacity in the South Larnaca Study Area is about 20,000 people (beach users). With some physical interventions in the coastal area (construction of artificial beaches) and changes in tourism product (through the implementation of attractions which can draw away people from the beaches area) it is possible, notwithstanding some reservations, to lift it to 30,000, but probably not any more.

[1] It is acknowledged here that this tourist establishment still has to obtain the necessary permissions from the authorities.

[2] Based on the CTO Carrying Capacity Study for the beaches of Larnaca District, 1986. It is noted that some of the physical characteristics of the beaches may have changed since then but reference is made here to this Study as no further more recent study has been made.

Figure 12: Sustainable Tourism Development Option

So, the main issue is what kind of beach users will put a pressure on the coastal area or whether it will be a more free area for anybody if this maximum will be filled only with secondary residences. Therefore it is important to mention that potential users of the beach area are not only the people in secondary residences and tourists of various types of accommodation capacities, but also the inhabitants of nearby town of Larnaca and its environs.

Therefore, the key issues are political – economic (planning) parameters/indicators or a decision on the extent to which further development of secondary residences will be allowed. This problem is especially sensitive because in Cyprus “tourism” objectives in land use planning is covering both the development of hotels and similar establishments and the development of secondary residences. Considering actual negative trends in the number of guest nights and enormous one time profits from the construction of houses only for summer use it is logical that investors are oriented almost only towards secondary residences.

Considering the actual tendencies in issuing licenses for secondary residences putting limits on such development is a prerequisite for achieving sustainable development option. For the Southern Larnaca Coastal Area therefore is necessary to stop further building of secondary residences in the narrow coastal area as soon as possible and to put a limit on a total number of them to 3,000 in total (meaning about 12,000 persons with usual ratio 4 for one housing unit). If those measures will not be carried out it is expected that the number of secondary residences will continue to grow to about 5,000 (or 20,000 persons) in the whole area before the year 2010. After that there will be probably no more room (and interest) for development of hotels and similar establishments and the coastal resource will be spent forever.

Although the approach taken in this Report is to concentrate primarily on the qualitative assessment of Carrying Capacity rather than on the quantitative (as emphasized in the PAP/RAC Guidelines and other recent Studies in the Mediterranean), the above figure of 3,000 is presented as a scenario to illustrate how this Study could facilitate further analysis and utilize the potential carrying capacity assessment. Carrying capacity assessment is essentially a management tool and not a numerical exercise aiming at pointing to a number. This might be misinterpreted as a fixed figure and lead to wrong planning decisions. Planning should focus on carrying capacity assessment as a process of taking into account ALL the parameters comprising the effort towards sustainability. This should be clear.

A related point here is the issue of looking much more closely at the infrastructure and resource capacity implications when a range of quantitative magnitudes are considered. Issues like roads, solid waste disposal facilities, water, etc. should be regarded as part of follow up study having first done a qualitative assessment and having shown the process of thinking in Carrying Capacity terms as done in this Case Study. To pursue a little further the scenario of the 3,000 mark, the following line of thinking elaborates the issues a little more.

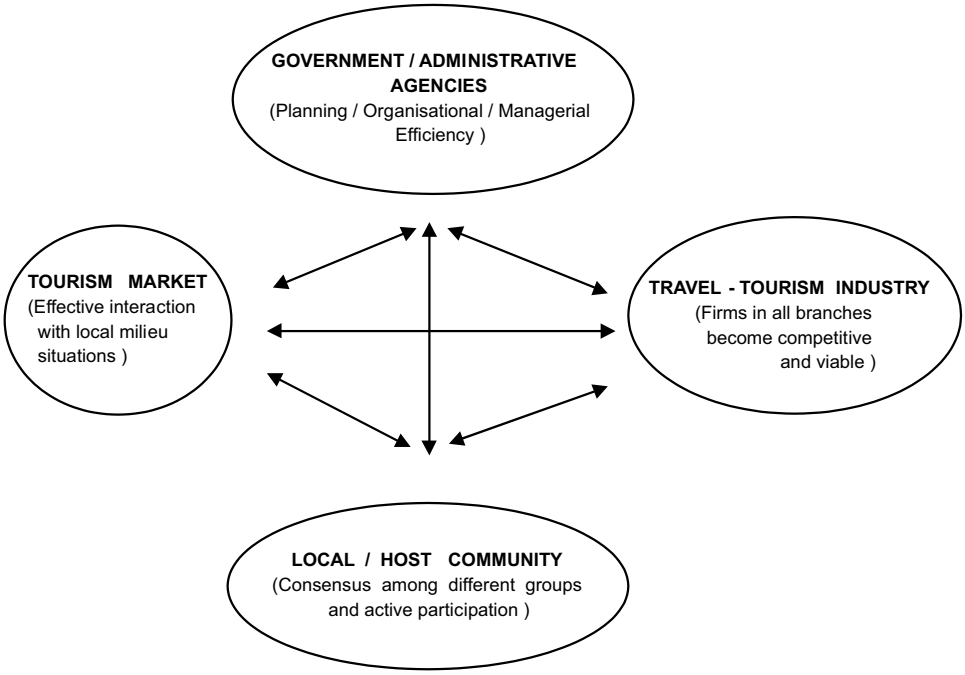
In such circumstances sustainable (and realistic solution) for carrying capacity is 12,000 persons in secondary residences (3,000 units) and about 6,000-8,000 in hotels and similar establishments. The distribution should be left to potential investors, if we consider this figure as a capacity framework to guide the planning authority. But it is recommended to offer plots west from Kiti peninsula to potential all inclusive tourism hotel development as a type of development suitable for those relatively isolated areas and actually more successful than standard hotel business operations. At the same time it is recommended to stimulate building of few traditional hotels in the free area northeast from Kiti peninsula in order to develop a sort of “central” zone with necessary catering and entertainment facilities for the whole zone.

6. Tourism Carrying Capacity Assessment of the Larnaca District and the Southern Larnaca Coastal Area

6.1 Requirements Necessary to Achieve the Sustainable Tourism Development Scenario

The sustainable tourism development scenario corresponds actually to a long term development model according to which, tourism contributes in a synergetic relationship to other productive sectors in a way which does not destroy the environment. This scenario is therefore related to the broad objectives of Integrated Coastal Area Management (ICAM). This type of development requires continuous efforts and coordinated actions among various actors. An overall frame of the main parameters involved in the process for attaining sustainable tourism development and the related conditions are outlined in Figure 13.

Figure 13: Main Parameters and Conditions of Sustainable Tourism Development



In order to achieve Sustainable tourism development option some priority policy actions should be undertaken. Two main recommendations for Southern Larnaca Coastal Area (but also for Cyprus in general) are:

1. Separation of hotels and similar establishments from secondary residences in the whole planning system, especially regarding market incentives for investment; and
2. Limitation in issuing licenses for secondary residences only in the areas far from the coast (minimum 500 meters and preferably one kilometer);

As has been noticed earlier, the investments climate is quite favourable regarding building of secondary residences, but not regarding building of hotels and similar establishments, except eventually of all inclusive hotels. Therefore the Larnaca district in general and especially the Southern Larnaca Study Area are designated unfortunately mainly for the building of

secondary residences. For the moment it seems as an appropriate solution due to short term economic interest, but when the investments climate for development of hotels and similar establishments will become favourable again there may be no more resources available.

In that sense the basic requirement for sustainable tourism solution is immediate discouragement / blocking of building of secondary residences in the narrow coastal area and its redirection towards areas more than one kilometer from the coast. The investors in housing construction will still have possibilities for profit (although lower), but that is the only solution for stopping the exploitation of existing resources in existing unsustainable manner. As a second option in this connection, reduction of the density standard for secondary residences leading to significant differentiation of the allowable plot ratio (density) for secondary homes relative to hotels.

Likewise it is suggested to stimulate development of hotels and similar establishments and supporting facilities, especially in the area from Kiti peninsula to the northeast. This should of course be investigated from the point of view of the sensitivity of the coastal and marine environment as mentioned in the Biodiversity Report under CAMP Cyprus. This is important because eventual further expansion of housing in that area will make impossible creation of central functions and facilities necessary for the people residing in the area, especially during summer. An EIA should be carried out to assess the potential impacts on the marine environment. Without such functions or with eventual location of those functions far from the coast the value of the area may further deteriorate from the point of view of the diversity of facilities.

6.2 Physical Structure and Distribution of Tourism Development

Spatial structure, design and physical distribution of tourism appropriate to the basic physical and ambient structure of the tourism area is a very important factor in attaining sustainable development. The attraction of tourist places depends on the way tourism activities and the related infrastructure are spatially distributed within particular physical and socio-cultural settings or territories, spaces and locations.

Specifically, the attraction of tourist places depends on certain parameters such as:

- The distinctive properties and actions the particular locations exhibit and undertake, with regard to supporting efficient and price market differentials, tourism production and consumption patterns;
- How efficiently localities or communities function as settings for particular interactions among different socio-cultural groups of local and visitor populations; and
- How well the particular territory or space manages to sustain and enhance those elements of nature and culture which constitute distinctive traits or assets of local milieu.

The proposed spatial structure and physical distribution of tourism development in the study area is based on a model of spatial clustering. It constitutes an intermediate choice between two alternatives: one of over-concentration of tourism and the second of a dispersal of tourism development.

From an economic development standpoint the concentration of the various branches of the tourism industry provides generally increased multiplier and synergy effects. Specifically it contributes to:

- Greater efficiency and lower costs of the necessary infrastructure and services, economising also on public facilities needed;
- Generating satisfactory visitor numbers and larger stays which consequently increase viability and ensure increased revenues in the accommodation and catering sector; and
- Creating a more stable / reliable / skilled labour force and better quality local services.

From the environmental & socio-cultural dimension standpoint the most important positive effects the concentration of diverse market segments and tourism's infrastructure could bring about are:

- the potential for enhancing various forms of interaction between hosts and guests; and
- the contribution for prevention of the environmental (natural resources) degradation.

From the management/marketing/promotional dimension standpoint the rational design and achievement of such a spatial pattern of tourism development could contribute to an easier management and control of tourism supply and services provided, leading also to better customer satisfaction and to an increase of the synergistic effects among certain of the provided attractions.

Some recent experiences has shown that beach capacity does not need to be the only limiting parameter in the total tourism carrying capacity even for the predominantly sunbathing destinations regardless of the quality of the accommodation establishments. It is especially a case in urbanized areas with a lot of entertainment, sport and shopping facilities and where there are various possibilities for excursions and other forms of activity outside the accommodation objects.

The tendency to use hotel/tourist resort pools instead of natural beach and to avoid long exposure to sun is also important factor that reduce pressure to the coast. That is especially important in a case of all inclusive resorts which can function as isolated entities not dependent to the situation in the environment "polluted" with secondary residences.

6.3 Tourism Accommodation Capacities and Their Structure

On the basis of the scenario for the overall maximum accommodation capacity levels of 6.000–8.000 beds in hotels and similar establishments and for mainly new capacities defined in the Sustainable tourism development option elaborated to illustrate important aspects of Carrying Capacity Assessment, it is possible to suggest only a broad spatial configuration pattern of accommodation for the study area. A more detailed spatial configuration of tourist accommodation should follow and relate to specific land- use plans and policies, as well as to the final ICAM proposals.

Elaborating on the suggested broad spatial configuration pattern, it should be emphasised that the new accommodation should concentrate in specific zones of tourist development potential identified in the general and tourism specific Land Use Plans.

The major centre should be around Kiti peninsula, subject to the protection of the Kiti Peninsula marine and coastal environment, as the only area with some existing hotels and with higher attraction value from the tourist point of view. Taking into account infrastructure and service provision considerations, it seems expedient to establish here a Tourism Information Centre providing pertinent information to visitors. This centre should serve at the same time to the secondary residences oriented to the northeast and to the predominantly free-standing future tourist resorts towards southwest.

6.4 Tourism Services and Support Activities

One of the crucial characteristics of the situation in the area regarding tourism is dependence on the beach tourism and at the same time a limited space for such development due to already high pressure on the coast. In such circumstances various and well equipped support activities and services play extremely important role in order to disperse tourists from the beaches.

At the same time the area by itself cannot offer many possibilities for the desirable dispersion, due to relatively weak attractions outside beaches in the near vicinity (the only important are churches in the villages Kiti and Perivolia, Kiti medieval tower and Salt lake protected area).

The actual situation regarding support activities is much worse than in other parts of Cyprus, because the whole district and especially the area south from Larnaca do not have a tourist image like Agia Napa – Paralimni area or Paphos. Considering extreme importance of supporting activities in order to attract tourist investments in the area, certain measures have to be undertaken in order to stimulate the development of those activities. That includes:

- basic shopping possibilities, including sports and beach equipment;
- basic sport and entertainment playgrounds, especially for children (amusement centres, playgrounds etc.);
- rent-a-car and rent-a-bike service and adequate local bus services to Larnaca;
- adequate information services and signing; and
- adequate interpretational and informational tools in order to stimulate tourists to explore the neighbouring areas (precise maps with marked tourist attractions and itineraries, interpretation panels in front of key tourist attractions etc.);

It is also important to offer some possibilities for dining, both traditional and fast food in order to avoid unnecessary transport costs to Larnaca. Such policy can contribute also to the production of new workplaces for the population in the neighbouring villages (especially Kiti and Perivolia) and to raise the quality of life in general.

7. Implementation Guidelines for Inclusion of CCA in CAMP

The idiomorphy of tourism suggests that the management of tourism related land uses should be fully integrated within broader Land uses management plans. In particular cases of site planning (e.g. resort types of tourism development) land-use management should come under particular regulations through specific legislative acts.

The basic function of CCA is to provide parameters relative to the development of tourism, which should serve for planning the development of other activities as well as for strategic documents dealing with tourism. Having in mind that CCA should be the integral part of any tourism planning document, it should also function as an integral part of CAMP.

In this regard, carrying capacity assessment should precede the designation of land use zones and this tool should be incorporated in the Planning System. The Development Plans prepared and implemented under the Town and Country Planning Law of 1990 will benefit from this tool in that development provisions will be in line and harmonized with resource, infrastructure, cultural, social and human capacities.

If CAMP is initiated before preparation of CCA, when undertaking preparatory activities relative to the planning in CAMP and making a basic analysis in the tourism plan, it is necessary to make a rough assessment of a possible carrying capacity span according to the generally assumed development options. It is therefore desirable to proceed with the assessment of CCA parameters, values and approaches which are intended to set the upper limit of the overall carrying capacity.

Along with the preparation of detailed analyses within the CAMP and tourism plan, it is also necessary to develop possible **tourism development options** as the basis of formulating carrying capacity. It is stressed that capacity issues are related to the development options considered. Along with the forecasts necessary for defining the objectives and strategies of CAMP, a synthesis of CCA should be made in a way that it becomes a component of the objectives and strategies of CAMP.

Since the CCA, thus defined, has become a component of CAMP and the ICAM Framework proposed, the evaluation of effects and monitoring of CCA is done within the CAMP review process and as part of the implementation of the tourism and land use plan. When formulating various phases of work care should be taken in order to avoid overlapping, because most of the data needed for CCA have their place in the documentation needed for CAMP.

Should a CCA be made before the initiation of the CAMP it has to be integrated later into a proper position taking into account also the proposed preparation of the Island Plan as proposed in the Strategic Development Plan for Cyprus 2007-13. In that case within the preparatory activities it is necessary to study the existing CCA as the basis for formulating further phases of the work. Therefore the data from the documentation used for the preparation of CCA has to be included in the documentation needed for the preparation of analyses and forecasts within CAMP, meaning that CCA should be used as an input document in all phases on the work on CAMP and the ICAM Framework.

In such way the goals and strategies to be defined within CAMP will be harmonized with the results of CCA and the CCA will again become a component of CAMP and function as part of the implementation of the tourism plan. The similar function CCA can have in strategic documents for tourism, because CCA has ability to determine the most suitable scenarios for tourism development.

Contacts:

Ministry of Agriculture, Natural Resources and Environment
Environment Service
Address: 20-22 October 28th Avenue, 2414 Engomi, Nicosia, Cyprus
Tel: +357 22408920
Fax: +357 22774945
Email: jconstantinidou@environment.moa.gov.cy
Web: www.moa.gov.cy

Priority Actions Programme Regional Activity Centre (PAP/RAC)
Address: Kraj sv. Ivana 11, HR-21000 Split, Croatia
Tel: +385 21 340470
Fax: +385 21 340490
Web: www.pap-thecoastcentre.org/

Carrying Capacity Assessment

CAMP CYPRUS

CAMP Cyprus is a programme implemented jointly by United Nations Environment Programme Mediterranean Action Plan (UNEP/MAP) and the Government of Cyprus through the Environment Service of the Ministry of Agriculture, Natural Resources and Environment. CAMP Cyprus sets out to address problems and issues of sustainable development of coastal areas with a view to improving further existing policies and practices towards the coast.

In the period 2005-2008 the following CAMP activities have been implemented:

- Methodology of Integrated Coastal Area Management:
  - Integrated Coastal Area Management (ICAM)
  - Sustainability Analysis and Indicators
  - Biodiversity Concerns in ICAM
- Tools of Integrated Coastal Area Management:
  - Strategic Environmental Assessment
  - Carrying Capacity Assessment
  - Environmental Economics (Resource Valuation and Economic Instruments)

UNEP MAP PRIORITY ACTIONS PROGRAMME