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GUIDE TO



PRIORITY
ACTIONS
PROGRAMME



GOOD PRACTICE IN TOURISM CARRYING CAPACITY ASSESSMENT

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List of acronyms

CAMP	Coastal Area Management Programme
CCA	Carrying Capacity Assessment
GIS	Geographic Information Systems
ICAM	Integrated Coastal Area Management
ICZM	Integrated Coastal Zone Management
ISOLE	Islands Satellite Observation of Local Exploitation
MAP	Mediterranean Action Plan
NGO	Non-Governmental Organisation
OECD	Organisation for Economic Cooperation and Development
PAP/RAC	Priority Actions Programme / Regional Activity Centre
PSR	Pressure-State-Response
UNEP	United Nations Environment Programme
WTO	World Tourism Organisation

PREFACE

The Priority Actions Programme (PAP) of the Mediterranean Action Plan (MAP), as part of the United Nations Environment Programme (UNEP), has for 17 years been promoting activities relating to the "Development of Mediterranean Tourism Harmonized with the Environment", with the active participation of 14 Mediterranean countries. The launch of this activity in 1985 was based on the experience of MAP at that time, which indicated that socio-economic trends, linked both to poor management and development planning, were the cause of most environmental problems. In addition, it emphasised that environmental protection should be closely linked to social and economic development.

The priority action "The Development of Mediterranean Tourism Harmonized with the Environment" included a series of seminars and expert meetings revolving around national reports and case studies from participating countries (1986-1989). It resulted in a synthesis 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".

Additionally, a proposal was made for a model methodology for tourism Carrying Capacity Assessment (CCA). Following the presentation and the discussion of the proposal at a workshop organized in 1990 by the UNEP Industry and Environment Office and the World Tourism Organization, the CCA studies for the Brijuni Archipelago and the island of Vis in Croatia were prepared, and shortly afterwards, a similar study was carried out for the Central-Eastern part of the island of Rhodes in Greece.

On the basis of these above-mentioned reports and of other experience obtained through the work on the priority action, a team of experts prepared the "Guidelines for Carrying Capacity Assessment for Tourism in Mediterranean Coastal Areas". After the review of the document, the Guidelines were discussed and subsequently amended in an expert meeting in Split in June 1995, and were finally adopted at the regional Workshop in Split in January 1997.

Immediately after the Guidelines were published, one more CCA study was prepared - this time for the area of Marsa Fuka-Matrouh in Egypt, completed in 1999. Following this, a study on the area of Lalzi Bay was initiated, although interrupted a little later due to ongoing political developments in the country. Both studies were prepared according to the Guidelines, and in this new phase, GIS was introduced as a tool for analysis and synthesis of data, as well as a means

for making final planning proposals. PAP also organized special training courses for local planners and government officials in the preparation of carrying capacity assessments, based upon the relevant Guidelines - first in Tartous, Syria, and then in Tripoli, Libya.

PAP promotes a flexible approach to tourism CCAs. This approach is based on the development of multifaceted tourism development scenarios, incorporating viewpoints ranging from those of developers to those of ecologists. The sustainable tourism option is the common derivative of the CCA process on the basis of which CCA is defined. Since the majority of the Mediterranean countries have accepted such an approach as the one most suited to the region, the PAP methodology was recently implemented in two new studies prepared by national teams with PAP supervision - for the Maltese Archipelago, and for the province of Rimini in Italy.

Recent experiences with Malta and Rimini, both highly developed and saturated tourist destinations, in the preparation of CCA studies using PAP methodology, has raised some new questions that this methodology should be enabled to answer. Actually, it is evident that the CCA approach, following the PAP Guidelines, is also applicable in developed areas, but it is necessary in such cases to enrich the methodology with some new elements that would anticipate the requirements of this context. It is clear that there are no stringent rules and formulae utilised to arrive at an area's tourism carrying capacity, as each area has its own unique characteristics. Some issues, however, are common ones. The experience gathered through other studies conducted for varying destination types, may shed light not only on methodologies but also on approaches, conclusions and implementation procedures for tourism CCA.

Such issues open the discussion of the various uses of CCA and of the necessary innovations as a result of practical experiences both in PAP and in non-PAP methodologies for CCA. Since sustainable tourism development is nowadays accepted as the only acceptable option for successful tourism development, this document pleads for the wider use of CCA as an efficient and relatively easy planning tool, especially for Mediterranean's coastal areas.

1. INTRODUCTION: WHY DO WE NEED TOURISM CARRYING CAPACITY ASSESSMENT?

The experiences accumulated by PAP have shown that tourism CCA has proved to be an efficient planning tool applicable in both less developed and highly developed areas. The analysis of some CCA examples completed without, or only with the partial use of PAP methodology, has shown that CCA can take advantage of existing databases, and that it is useful either as a independent activity or as an input into Integrated Coastal Area Management (ICAM) or similar planning and management processes.

Recent examples of the use of PAP methodology in the preparation of CCA studies by national teams in Malta and Rimini, have also indicated the need to promote this methodology as one applicable all around the Mediterranean as a structural framework within which other developed techniques, such as sustainable tourism indicators can be included. At the same time, various examples of CCA have revealed the necessity to refine the "Guidelines for an Environmental Approach to the Planning and Management of Tourism in Mediterranean Coastal Zones", incorporating some new tools and techniques, especially GIS. Therefore one of the most important aims of this guide is to discuss various practices in tourism CCA, including those using methodologies other than those used by PAP, and to stimulate new ideas for the future preparation of CCA studies in the Mediterranean and in other parts of the world.

The examples of CCA presented in this document help to demonstrate in which types of area, in both geographic and economic terms, CCA can be most efficiently used. The possible addition of methodologies and techniques is indicated, and approaches on how best to manage the process of public participation and public awareness in CCA are also presented. This Guide also stresses the differences in approaches to

CCA, with regard to decision-making, and its integration into other planning and management documents and follow-up activities. Finally, in order to clarify CCA methodology to people who are not familiar with it, special attention is given to crucial elements in the preparation of CCA, such as data management, the use of sustainable tourism indicators, the identification and selection of development scenarios, and to the calculation of tourism carrying capacity.

In order to stress the differences in approaches to CCA, this document has not restricted itself to model examples of CCA studies carried out by PAP (namely those of the Island of Vis in Croatia, of the Central-Eastern part of the Island of Rhodes in Greece, of Lalzi Bay in Albania, and of the Marsa Fuka-Matrouh Coastal Zone in Egypt), but also studies only partially conducted according to PAP methodology (for the country of Malta and for the Province of Rimini in Italy), as well as a number of CCA studies or similar activities prepared completely independently of PAP (namely for the island of Elba in Italy, and the Calvia Municipality on the island of Mallorca in Spain). Through all these case studies, which differ with regard to the physical and economic characteristics of the area under scrutiny, the extent of analysis, methodology and the approaches adopted, the aim is to show the various ways of applying CCA in different areas.

PAP hopes that such an approach will help to demonstrate the benefits of preparing tourism CCA for Mediterranean coastal areas and probably for other areas of the world facing similar development challenges. Therefore this document is targeted at niche markets, which will have varying needs:

- To **local authorities** and **decision-makers** (including tourism policy-makers, tourism planners, planning authorities) to understand the wide applicability of CCA, and the relatively low cost of its preparation, bearing in mind its potential benefits;
- To **experts** preparing CCA studies and related support materials, to provide guidelines as to the preparation of those materials;
- To **tourism sector actors** (hoteliers, agencies, tourism associations) who can realise, with the help of this document, that CCA is not a tool restricting their future development, but a tool helping them to be more efficient and profitable;
- To **NGOs** to use this document as supportive evidence as to why the preparation of tourism CCA in their area of concern should be initiated, in order to assure sustainable tourism development;



- To **members of the general public** to realise that through the preparation of a CCA study, they can play an active role in the planning of tourist development in their localities.

In order to meet all the above-mentioned goals, this document is divided into four main parts:

- a. After an introduction explaining why we need tourism CCA, there is a chapter addressing the context for tourism CCA in the Mediterranean, which includes a short review of the present situation, a basic analysis of the trends and problems confronting Mediterranean tourism, and particularly those problems which are related to carrying capacity. This also includes criteria for the selection of case studies, and issues related to their analysis.
- b. The explanation of the context for tourism CCAs in the Mediterranean is followed by a short review of tourism CCA studies: four studies by PAP; two studies partially conducted according to the PAP methodology, and two entirely based upon non-PAP methodologies.
- c. The crucial chapter of this Guide analyses key issues for good CCA practice. It features pointers on how to tackle CCA decision-making, the definition of geographical limits for CCA, the choice of appropriate methodology, data management, the use of sustainable tourism indicators, the process of public participation and public awareness, the identification and selection of development scenarios, tourism carrying capacity calculation, its integration into planning and management activities, and finally, follow-up activities. Each aspect is explained via specific examples showing various ways of assessing carrying capacity and its implementation in practice.

- d. Finally, the document concludes with a recommendation for successful tourism carrying capacity assessment and its implementation in practice. A general proposal is also included for the conception and methodology of CCA in the Mediterranean as are comments on the cooperation between Mediterranean countries in the production of CCA studies as well as the inclusion of CCA studies in other planning documents, and especially those on Integrated Coastal Area Management.



2. THE CONTEXT FOR TOURISM CARRYING CAPACITY ASSESSMENT IN THE MEDITERRANEAN

2.1 Tourism in the Mediterranean

The Mediterranean region is unique as it unites countries from different regions integrating assorted cultures: European (South-Western and South-Eastern), Middle Eastern and North African. As a result of its

diverse culture, mild climate, natural beauty, rich history, established architectural heritage, attractive geography, comparatively large population (Figure 1), and cuisine, the Mediterranean remains a key world zone for tourism activity.

Table1. Basic data about Mediterranean countries

State	area in sq km	inhabitants 2001 (in '000)	inhabitants per sq km 2001	tourists 2000 (in '000)	international tourism receipts 2000 (in USD million)
Algeria	2,381,741	31,736	13.3	866	24
Albania	28,748	3,510	122.1	39	211
Bosnia-Herzegovina	51,129	3,922	76.7	110	17
Croatia	56,542	4,381	77.5	5,831	2,758
Cyprus	9,251	763	82.5	2,686	1,894
Egypt	1,001,449	69,536	69.4	5,116	4,345
France	543,965	59,551	109.5	75,500	29,900
Gibraltar	7	28	4,262.0
Greece	131,957	10,624	80.5	12,500	9,221
Israel	20,796	5,562	267.5	2,400	3,100
Italy	301,309	57,680	191.4	41,182	27,439
Lebanon	10,452	3,628	347.1	742	742
Libya	1,759,540	5,241	3.0	40	28
Malta	316	395	1,250.0	1,216	650
Monaco	2	32	16,308.0	300	...
Morocco	458,730	30,645	66.8	4,113	2,040
Palestine and Gaza	6,242	3,625	580.7	330	155
Sebia and Montenegro	102,173	10,677	104.5	152	17
Slovenia	20,251	1,930	95.3	1,090	957
Spain	504,759	40,083	79.3	48,201	31,000
Syria	185,180	16,767	90.5	916	474
Tunisia	163,610	9,705	59.3	5,057	1,496
Turkey	779,452	66,494	85.3	9,587	7,636
TOTAL	8,517,601	436,515	51.2	217,974	124,104

Source: WTO, 2001



Figure 1: Population density in the Mediterranean (source: Blue Plan)

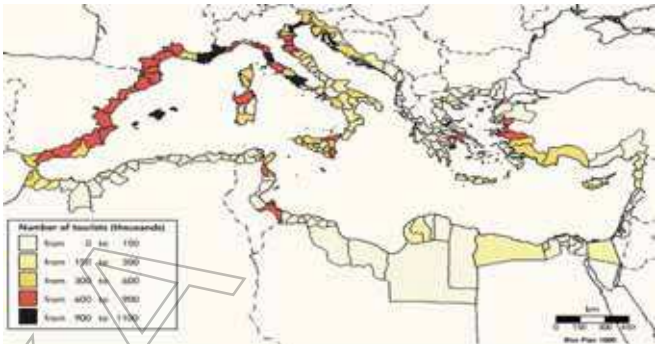


Figure 2: Density of tourists in the Mediterranean (source: Blue Plan)

As Table 1 show, the growth in tourism is not equally distributed among Mediterranean countries. France, Spain and Italy, are among the ten most popular tourist destinations in the world and important generators of tourism. The market share of their destinations is 35%, 22% and 19% respectively in terms of arrivals to the Mediterranean region and 23%, 25% and 22% in terms of international tourism receipts. Domestic tourism also plays a major role in these countries, with the result that a high proportion of people living in towns and cities move to the coast for recreation and leisure pursuits.

These and other European countries bordering the Mediterranean, benefit from land transport arrangements as well as from air and sea travel facilities. North African countries, such as Tunisia, Algeria and Libya, are in a similar situation as regards intra-continental tourism. The Mediterranean is also characterised by a number of islands of varying size,

and popularity as tourism destinations (Corsica, Sardinia, Sicily, the Balearic islands, the Croatian islands, the Greek Islands, etc), two of which (Malta and Cyprus) are also country destinations.

With nearly 220 million tourists visiting the Mediterranean and generating over US\$120 billion, this region accounts for nearly one-third of the world total international tourist arrivals and 26% of world tourism receipts. The Mediterranean has, for a number of years, been the world's leading tourist destination, both for international and domestic tourism. Tourist volumes visiting the Mediterranean region keep on increasing though the region's market share throughout the world is on the decline (see Table 2). This is due to other regions, such as the Far East, becoming more accessible and popular with travellers. Average annual growth rates in arrivals for the Mediterranean is around 5% and 4% in terms of receipts.

Table 2: International tourist arrivals and tourism receipts, World & Mediterranean*

	1990	1995	2000
Arrivals (000)			
World	457,217	565,384	697,600
Mediterranean	151,023	162,835	217,974
% share	33.0	28.8	31.2
Receipts (US\$ million)			
World	263,647	405,840	477,300
Mediterranean	70,742	106,284	124,104
% share	26.8	26.2	26.0

Source: WTO, 2001

* WTO data for the whole Mediterranean are slightly different from those presented in this table, because Portugal and Jordan were also counted as Mediterranean countries, while for the year 2000 the data for Albania, Libya and Yugoslavia (now Serbia and Montenegro) were not included

Following the events of 11th September 2001, some changes in tourist movements have been observed, causing problems to the development of tourism in the Mediterranean region. These were mainly due to two reasons:

- Some of the destinations, particularly islands (such as Malta and Cyprus), are more accessible by air, and the market experienced a preference for land travel arrangements as opposed to air travel.
- Some of the destinations, particularly in the Middle East and North Africa, were perceived to be unsafe and a number of cancellations were made. Severe economic consequences were noted in some countries.
- Some destinations, especially the continental ones (e.g. France or Croatia), experienced increases in incoming land based travel, or benefited from the traveller's perception of them as safe destinations (e.g. Malta).

The Mediterranean became the main target for tour operators in the 1960's when air travel made many destinations more accessible and affordable. Tour operators' packaged travel requirements (particularly air travel and accommodation) made travel more affordable to the consumer, who was often attracted by the 'sun, sand, and sea' offer. This was possible because tour operators contracted large quantities of air seats and hotel rooms at wholesale prices. This increase in demand for tourism led to various areas in the Mediterranean becoming popular tourist destinations, some of which embarked on a drive to attract mass tourism.



Today, some of these countries (e.g. Malta and Cyprus), or regions (e.g. the Balearic Islands) or coastal areas (e.g. the Spanish Coasts), heavily depend upon tour operator business. Since traditionally, the predominant product was linked to seaside summer holidays, sun, beach and water activities have all strongly influenced the development of tourism in this region; with the result that tourism activity is mostly coastal in nature. Pressures on various destinations triggered the

question of whether to extend tourism activity to the hinterland, or to sustain the concentration of activity in coastal areas. It is estimated that the Mediterranean offers more than six million tourist bed places.

Coastal tourism activity, which by its very nature converges in the summer months, is still popular, often constituting the main type of tourism of most Mediterranean destinations. This results in most of these destinations being characterised by high inward flows in summer, leading to the seasonal nature of tourism industries in the Mediterranean. Destinations such as some Greek islands actually close down for the winter months and re-open for the summer period. Employment thus becomes very seasonal in these resorts. Seasonal over-concentration leads to increased pressures on both environmental and cultural resources.

Some Mediterranean destinations have managed to create year-round tourism, particularly by attracting tourists for conferences and by providing incentives relating to the exploration of their rich cultural heritage and the Mediterranean way of life. In this way, some destinations have spread their tourism activity across different seasons, activities and tourist motivations. Mediterranean tourism has diversified into an infinite choice of products including leisure, business, culture, nature, sport, relaxation, health spas and conferences. Niche markets are being targeted through the development of particular tourism products for senior travellers, young people, and those who travel for specific purposes such as nature observation and/or health reasons.

The high level of touristic activity in the Mediterranean region inevitably results in economic, environmental and social impacts. Some destinations are heavily dependent upon tourism in particular, because of the lack of other economic activities through which they would be able to sustain a standard of living. In a climate that wills tourism to prosper, the development of other industries may be stifled because of the incompatibility between these economic activities and tourism. A high proportion of Mediterranean destination



countries have allocated extensive areas in which developed tourism resorts are situated (e.g. areas in Tunisia). These zones may offer little interaction between visitors and locals except for that between locals who work in these resorts and tourists. Other destinations offer very strong possibilities for social interaction. Popular tourist areas experience high saturation levels resulting in dissatisfaction for the visitors, and the discontent of the resident population.

Increasingly, growing numbers of politicians, entrepreneurs, and ordinary people are becoming aware of the importance of the natural and cultural environment for sustainable tourism development. Some areas are still virgin land whilst others have witnessed a pronounced destruction of their natural environment as a result of development processes. Water shortages are not uncommon in some Mediterranean tourist destinations which have been compelled to resort to desalination systems for water production, resulting in high-energy consumption. The lack of appreciation and awareness of the importance of the environment characterises some of the Mediterranean countries, particularly the Southern Mediterranean ones, which may also lack the means of implementing environmentally friendly practices.

2.2 Carrying capacity assessments in the Mediterranean context

In this complex context, it is of major importance to take the appropriate decisions. The specific level of demand encountered, as well as the highly developed tourism facilities and infrastructure, has led some of the Mediterranean destinations to shift their focus away from quantitative goals (e.g. arrivals), to qualitative ones, such as aiming to increase tourism's contribution to economic development and social prosperity. Greater importance is being placed upon the allocation of land for tourism purposes so as to be compatible with sustainable development goals. The World Tourism Organisation encourages tourism destinations to give priority to:

- Sustainability criteria;
- Participation of the local resident population in the development and management of tourism activities;
- More active national marketing of the tourism;
- Diversification of tourist products located outside established destinations;
- Reduction in the seasonality of tourism; and
- Enhancing the quality of the tourist services provided.

In the long run, it is essential for saturated and potentially saturated tourism zones to achieve the right

balance between the economic, social and environmental contexts, which form the background for tourism carrying capacity assessment for Mediterranean areas. CCA may become an additional tool for decision-makers to redefine the direction that tourism development should follow. The use of different development scenarios may help to indicate which is the more appropriate and sustainable option to choose. Exceeding a tourist destination's carrying capacity (be it a resort, area, or country) will result in diminished economic benefits accruing to the area, increased environmental problems, and social imbalances.

Decision-makers may have difficulty in recognising the problems that can accompany the development of tourism, particularly if this means reversing past decisions. Additional problems are caused by lobby groups that have an interest in preventing the carrying capacity assessment from taking place at all. Accepting the concept of carrying capacity is the first step towards ensuring the right type of tourism development for the future.

Once the decision to conduct a CCA has been made, the next question arising is: who should undertake it? If local technical expertise on CCA is unavailable, the contribution of external assistance has to be taken into consideration. However, it is essential that local experts collaborate with the working team. This not only helps to build up the region's or the country's expertise in such a field, but also ensures that the right information is used and that data is correctly interpreted throughout the CCA exercise. Another problem that may arise during the exercise is that strong lobbying may be exercised by the tourism developers, by environmentalists, by residents or by other interest groups. Taking into account the arguments put forward by such lobbyists is essential, but it is even more important that the exercise not be led by these arguments, which will lead to a rather biased CCA focused on sectorial interests.



The analysis of case studies has shown that CCA forms part of ICAM in only a few cases. However, CCA was successful in cases where its recommendations were adopted and integrated into existing planning structures. In other case studies, CCA was considered as a stand-alone plan, with little relation to the overall planning process. Consequently, these latter studies were barely implemented.



3. A REVIEW OF TOURISM CARRYING CAPACITY ASSESSMENT STUDIES

This guide to good practice provides a review of tourism carrying capacity assessment studies and describes the issues underpinning good CCA practice. The choice of case studies was based on a number of criteria. Given that this guide is intended for Mediterranean coastal areas, the case studies selected were restricted to instances from this Basin. It is thought that the Mediterranean context for conducting a CCA differs from that of any other region, particularly in terms of the level of economic dependence upon tourism, environmental sensitivity, social attitudes, and the availability of resources and technical expertise. Nevertheless, many aspects of CCA in the Mediterranean could be applicable in other areas in the world possessing similar economic, socio-cultural and environmental characteristics.

A tourism carrying capacity assessment may be conducted for any area irrespective of the level of development it has reached. An area which is virgin territory and one which is highly urbanised, are both eligible candidates. The Mediterranean is characteristic for such diverse typologies. This means that a single model with standard ratios that can be applied in all instances is an absolute non-starter. Such standard ratios do not directly translate to differing situations.

Furthermore, each area is unique, possessing particular characteristics, confronting specific limitations and revealing different opportunities thus requiring specific attention. Mediterranean destinations, though to a certain extent homogeneous in terms of the way they are presented as tourist resorts, are in fact diverse, so that setting a model based upon a particular case study would be inadequate. The more appropriate approach is therefore to select best practices from each case.

One criterion for inclusion of cases in this guide was that cases would encompass the range of destination types, i.e. those varying from highly urbanised country destinations to virgin territories where tourism had barely commenced. Furthermore, case studies were not limited to coastal areas, so as not to ignore implications for hinterland areas. This guide seeks to include cases from all around the Mediterranean: Southern European, Central Mediterranean, North African, Middle-Eastern, and the Western and Eastern Mediterranean. However, it proved to be fairly difficult to track down carrying capacity exercises for all Mediterranean. This was a general difficulty, and was not particular to a specific sub-region of the Mediterranean.

Although a good proportion of studies included in this guide contributed to the formulation of the PAP guidelines on CCA (e.g. Vis, Rhodes), or were based

upon PAP's guidelines (e.g. Fuka-Matrouh, Malta, Rimini), this guide does not only present these cases. This guide includes any relevant and known case study relating to carrying capacity and which also seeks to promote sustainable development in the area under review (e.g. Calvia).

The cases included in this guide cover destinations which were at different levels of development, and whose tourism products differ. Some of the areas under review are more dependent upon domestic tourism than upon international tourism. Factors common to all the chosen areas include:

- The need for coastal area management;
- The desire for sustainability;
- The involvement of the local population;
- The decision to conduct the study;
- The nature of the problems relating to the impacts of tourism; and
- The nature of the net benefits arising from tourism industry activity.

The cases considered, on the other hand, differ in terms of the level of tourism development, their geographical characteristics, the resources allocated to the study, the level of planning and the availability of local technical expertise.

The tourism carrying capacity studies from which best practice will be drawn relate to:

- Calvia, Spain: the Action Plan was approved and implemented in 1997;
- Elba, Italy: completed in 2000;
- Fuka-Matrouh, Egypt: completed in 1999;
- Lalzi Bay, Albania: the draft study was prepared in 1997;
- Malta: completed in 2001;
- Rimini, Italy: ongoing;
- Rhodes, Greece: completed in 1993;
- Vis, Croatia: completed in 1991.



3.1 Calvia, Mallorca, Spain:
Local Agenda 21 Project

Study area

The Municipality of Calvia, on the Spanish Island of Majorca, has approximately 50,000 de facto residents, and covers an area of 145 sq km. Calvia has a strong economy, but it is based almost exclusively on tourism. During 1995, with the help of the Spanish General Secretary of Tourism, the Town Council decided to initiate the Calvia Local Agenda 21 project, putting a halt to some new housing plans and reorienting the tourist development towards social and economic sustainability.

Development of tourism

Calvia, with 150,000 hotel beds, receives more than 1.6 million tourists per year. The development of tourism in Calvia began in the 1960s, without any concern for the future, and lacking in a strategy for the development of tourism. As a result, natural resources were seriously affected - especially in the coastal zones. At the end of the '80s, the quality of the resorts began to decrease, which triggered a rise in the awareness of the shortfalls in the '60s approach to development. At the beginning of the '90s, the Council and the private sector implemented a massive reconstruction project in the area impacting on infrastructure, utilities and social installations. It took in the demolition of various buildings (e.g. hotel units).

Methodology

Calvia Local Agenda 21 is a long-term strategy, which aims to create an equilibrium state in the social, economic, built and natural environments. Some recently implemented significant initiatives include the development of environmental management plans for key local municipal functions, such as water supply, waste treatment & disposal, transport, and energy.

The Project analysis confirmed that excessive tourism and urban growth in Calvia has destroyed the balance within the basic ecosystem. Carrying capacity is a concept intrinsic to all local agenda 21 projects. The methodology for the Calvia Local Agenda 21 follows a similar approach to that used in CCA (scenario development, utilisation of indicators, etc.)

Three issues are uppermost in the Calvia project:

- i) The participation of the local population;
- ii) The sustainable development of tourism, and the upgrading of general environmental quality;
- iii) The restriction of developmental pressure, limits on growth, protecting the landscape, and rehabilitating the damaged environment.

The steps followed were:

- a) Data analysis utilising a large number of tourism indicators;
- b) An analysis and review of the current situation;
- c) A public participatory process;
- d) Scenario development;
- e) The implementation of immediate actions;
- f) The establishment of an observatory on sustainability and the quality of life.

Scenarios

The Local Agenda 21 project had used six thematic areas in its indicators. It also used two scenarios, following two different development trends starting from the situation existing at the beginning of Local Agenda 21 in 1995, when tourist and residential accommodation capacity were around 150,000 units. The two growth scenarios developed were as follows:

1. The **Trend Scenario** is based on the assumption that within one generation (twenty years) both the tourism industry and urban development would continue to maintain their unlimited expansion policies. According to a pre-existing town planning regulation, accommodation capacity would grow to reach 250,000 units, with a margin of growth up to 300,000 units. Experts and citizens agreed that in the case of such a scenario, the environmental pressure on Calvia would overflow, Calvia would become unattractive as a residential area and non-competitive as a tourist destination. The revitalization of the local area would be hindered, leading to a deterioration in the quality of life.
2. The **Comprehensive Rehabilitation Scenario** has been developed as an alternative scenario to the previous one, based on limiting tourist growth. It aims to rehabilitate the natural and architectural heritage, and reorient all local policies to be in line with sustainability criteria. Accommodation capacity would be, according to this scenario, around 210,000 units. Following a citizens' survey, 10 Lines of Action and 40 initiatives have been approved in order to implement this scenario.

Results and follow-up

The Comprehensive Rehabilitation Scenario was seen as the most appropriate model of development and therefore suitable for a successful plan for sustainable tourism development. The methodology used is comparable in part to the CCA approach. The definition and monitoring of indicators shows the development of the strategy. Furthermore, the participatory process is a strategic and strong feature of the Calvia action plan.

The calculation of carrying capacity will be piloted in a coastal area of Calvia. The status quo in Calvia has

much in common with ageing resorts throughout the Mediterranean. It is reasonable to assume that many of the solutions and objectives derived from the Calvia experience could have a wider application. These include:

- Remedying the overconstruction of city structures and environmental deterioration, which have devalued the environment in ways that are cause for concern amongst consumers. New development concepts include 'total sensorial quality' and 'environmental sustainability'.
- The rejection of the model of the artificial town, which is monothematic, over-congested and limited to sun and beach.
- Rejuvenating the gradually ageing and inflexible tourism infrastructures.

The municipality of Calvia represents, to date, the most advanced example of sustainable tourism development in the Mediterranean. The first results, following five years of activities are: demolition of those hotels along the coast which have proven obsolete and offensive to the environment; promenade constructions to protect sensitive areas; preventive freezing of the General Ordination Plan, etc.



3.2 Island of Elba, Italy: ISOLE Project

Study area

Elba is the largest of the Tuscan islands and the largest island in Italy after Sicily and Sardinia. It is located 10 km from the mainland and covers 224 sq km. Its coast stretches for 147 km and its main roads cover a total of 190 km. It has a population of about 30,000 and is divided into eight municipalities.

Development of tourism

Tourism represents a major economic activity for the Island of Elba. Elba is relatively accessible as it can be reached by ferry in an hour, by faster boats such as hydrofoils which take 20-30 minutes, or by plane. Elba, preferred by Italian and European tourists, particularly German ones, boasts modern and well-

equipped tourist structures. According to the data published by the provincial tourism authority, there were around 500,000 arrivals in 2001, while there were more than three million overnight stays on the island.

Methodology

The "ISOLE" (Islands Satellite Observation of Local Exploitation) project was co-financed by the European Commission DGXII, and was conceived of as a way of improving development on small islands. The objective is not to influence the administrators with predefined development policies. In the framework of the ISOLE for the Island of Elba, a sophisticated CCA, based on a GIS model has been carried out. The results are very encouraging and the model could be easily applied to the general PAP methodology. The model is intended as a territorial monitoring tool and seeks to highlight the risks and to define the limits of resource exploitation. The intention is to determine the carrying capacity, in terms of tourists, for a tourism destination in advance of the advent of a state of crisis (the over exploitation of natural resources, lack of basic services, etc). The output is a calendar of stress periods which could help managers to better optimise eventual actions and intervention.

The methodology has been carried out according to the following steps:

- Identification of constraints;
- Scenario definition;
- Anthropic pressure assessment;
- Comparison between anthropic pressure and scenarios;
- Definition of critical time periods.

A number of physical limits of tourism activities have been identified: water supply capacity; waste disposal capacity; beach and natural resource exploitation (beach surface per person); pressure on the population (tourists/inhabitants ratio). A critical value has been defined for each limiting factor.

Scenarios

The ISOLE project has recently finalised an experimental model that is able to calculate the maximum carrying capacity of the island of Elba according to four different sustainability scenarios. Each scenario is correlated with one limiting factor and the overstepping of the critical value of a limiting factor (i.e. water treatment capacity per day) causes the shift from one scenario to another:

1. **Conservative Scenario:** it is associated with the most critical constraint, which is water consumption per person per day. The capacity level has been calculated as 52,646 tourists per day.

- 2. **High Sustainability Scenario:** associated with basic tourism's resource exploitation (e.g. number of tourists/ m² of beach). The maximum number of tourists per day is 60,100.
- 3. **Low Sustainability Scenario:** associated with urban solid waste disposal per day. Capacity level is 65,428 tourists per day.
- 4. **Degenerative Scenario:** associated with tourism pressure (ratio of tourists and local residents). The number of tourists is 89,922 per day.

The carrying capacity of the four sustainability scenarios for Elba has been calculated for the April - September 1998 period. According to the model, during the tourist season in 1998 (180 days) the first scenario was attained for 11 days; the second for eight, the third for 38, while the fourth scenario (degenerative) was reached for 66 days (more than 30%). For 59 days, any of the four scenarios was attained. This means that for 68% of the tourism season, at least one constraint was exceeded. The tourism capacity peaks were exceeded in the 3rd week of August.

Results and follow-up

The utilisation of the above model allows the monitoring of tourism flows on a daily basis and the identification of critical areas and periods of the year where the island exceeds its tourism carrying capacity. The estimate adopted is based on the assessment of overnight stays calculating the production of urban solid wastes.

Currently, action plans have not been implemented, while carrying capacity for the Island of Elba does not seem to have any political implications. At this stage, any form of participation of the local population has not been actualised.



3.3 Fuka-Matrouh Coastal Zone, Egypt: Coastal Area Management Programme

Study area

The Mediterranean coastal area of Fuka-Matrouh is located in the north-western part of Egypt, and represents, in economic terms, the most important part of the Matrouh Province. This Province covers an area of 212,112 sq km and had 212,000 inhabitants in 1996, representing 21.2 percent of the national territory, but only 0.4 percent of the population of Egypt. The region covers an area that is predominantly desert, and that sits between the heavily populated Nile Delta and the Libyan border. The coastal town of Marsa Matrouh is located some 290 km from Alexandria, and contains more than half of the population of the governmental area. The study area embraces about 60 km of the sandy-rocky coastline between the parameters of Marsa Matrouh city to the west, and Ras El-Dabaa to the east, and is a coastal belt which extends into the desert with an average depth of 50 km.

Development of tourism

The study area is a part of Egypt's Western Mediterranean Coast, and is one of the nation's most important development regions, due to the important resources available and the relatively low population density. It is well connected with the rest of Egypt by a four-lane highway and has an international airport. Unlike Egypt's Red Sea region, which is oriented mainly to international tourism, the study area is oriented mainly to domestic tourism and is covered with an enormous number of so-called 'tourist resorts', which are actually resorts full of second homes for Egyptians. Although it was impossible to collect data about the capacity of those resorts during the period of study, it can be estimated that their number has grown from about 20,000 at the start of the 1990s, to a minimum of 100,000 nowadays. At the same time, the number of beds in licensed hotels and similar establishments has not reached a total of more than 10,000. The existing tourist development patterns, dominated by secondary residence resorts for the domestic population, tend to produce tourist saturation of the area in a relatively short period.

Methodology

The work on a CCA for Marsa Matrouh started in 1993 with the first PAP "Report of the Mission Concerning Carrying Capacity Study of the Fuka-Matrouh Area". The process then faded until 1996 and the launch of the Coastal Area Management Programme (CAMP) initiative, where the CCA for Tourism Development was

treated as an input into the CAMP. Due to problems in collecting data on the area, the activity was concluded in 1999. Since the CCA was finalized after the "Guidelines for Carrying Capacity Assessment for Tourism in Mediterranean Coastal Areas" were released, it was carried out according to that methodology. This featured three basic groups of indicators - physical-infrastructure, socio-demographic and those concerning the political economy of Egypt and its effects on the study area.

A new addition to the methodology was the inclusion of the data synthesis chapter, focused on key elements identified as crucial in data analysis. In the case of Fuka-Matrouh those were problems of water supply, issues of management and protection and land-use planning policies, caused by lack of planning in the area, and choices of tourism markets and of development.

Trying to avoid a mechanical calculation of capacities, the CCA study introduced socio-economic and cultural parameters, leading to the conclusion that these were crucial for the CCA definition. A survey was undertaken in the areas suitable for tourism among six tribes, in order to assess the amenability of the locals to the development of tourism in terms of the economic, social and cultural conditions and to estimate the volume of manpower that could participate to the development.

All these innovations in methodology helped to promote the Fuka-Matrouh CCA as a type of structural model of CCA (according to PAP guidelines). Consequently, this work has also influenced the work done in Malta, and later in the Province of Rimini, encouraging the use of PAP methodology for the CCA projects in these areas. The Fuka-Matrouh case has also shown that relatively useful CCA work can be done, even if much significant data is lacking, and also that the absence of political pressures, caused here by the lack of political interest in the elaboration of the study, can help to produce a clear sustainable tourism development option.

Scenarios

From the data synthesis of the study, three scenarios were identified as realistic options:

- 1. The development of tourism without restrictions and control, based on large domestic and small scale investments, with short-term benefits and the extensive use of resources.
- 2. The free transfer to commercial interests of responsibility for overall development. This would be predominantly conducted by foreign

entrepreneurs, making a low contribution to the local economy.

- 3. An alternative tourism development scenario, to be based on developmental restrictions.

Since the first two scenarios were characterized as generally unsustainable and the third as unrealistic, a sustainable development scenario was proposed as the only feasible option. The sustainable scenario is based on a tourism product designed to attract the domestic and international markets and, as a result, to extend the tourist season. Carrying capacity, based on this option, was further elaborated using three main categories of parameters (physical-ecological, socio-demographic and political-economic). It is based upon a maximal accommodation capacity of the entire area, ranging from between 80,000 and 100,000 beds in total, and incorporates the idea of earmarking some areas for commercial development in order to ensure an economic base for a constantly growing population.

Results and follow-up

Although the results of the CCA study for Fuka-Matrouh were well accepted at the local and national levels, it appears that pressure regarding the building of second home resorts, is too strong to allow those plans to be implemented. The problem lies in Egypt's general policy of reserving the Red Sea zone for international coastal tourism development, and of allocating the Western Mediterranean Coast to domestic tourism. However, there is some hope that in the study zone, some areas will remain intact and preserve non-commercial accommodation capacities in order to assure a future economic basis for the growing population.



3.4 Lalzi Bay, Albania:
Coastal Area Management Programme

Study area

The Lalzi Bay Area - a zone of about 45 sq km, in the northern part of the Durresi District, is centrally located on the coast of Albania, about 20 km north of the major port of Durresi, and about 25 km from Tirana International Airport, accessible via very poor roads. The sandy coastal zone is not populated, and there are no more than 2,000 inhabitants in the nearby villages.

Development of tourism

Lalzi Bay, at the time of preparation of the CCA study, was a relatively virgin area lacking in any form of touristic development. A Tourism Development Zone of about 500 hectares was suggested in the Coastal Zone Management Plan for the Region of Durresi-Vlora in 1996, and a CCA was carried out as a follow-up to this study.

Methodology

The Coastal Zone Management Plan had already identified the characteristics for development, the key environmental conservation needs, and the potential locations for both intensive and small-scale tourism developments. The CCA team, working with Albanian experts, agreed that "the completely undeveloped central section of the Albanian coast is both an advantage and the main problem of tourism development...". Whilst a standard CCA work method was used, a variant was added in order to examine a range of alternative scales and densities of sustainable development, within the area's carrying capacity. In the CCA methodology, the following aspects were to be taken into consideration: the type, size and sensitivity of the elements that would appeal to tourists; national and regional requirements; tourism and environmental policy; the type of tourism and level of the development of tourism in the regional context; all interrelations between the region and the site being scrutinised; and the political, cultural and economic preferences of the resident population.

Scenarios

The CCA led to a choice of three viable alternative approaches/scenarios to sustainable tourism development at Lalzi Bay:

- 1. **Large-scale, high-capacity sustainable development**, of strictly limited areas, which are associated with marina development on the headland, with an urban pocket of development besides it. Medium-height development on robust sites, protecting the sensitive resource-zones from development.
- 2. **Small-scale, low-capacity, but high-spend,**

sustainable ecotourism, discreetly and sensitively slotted into the protected tree cover on the lowland site, and in a pocket on the cape headland, thereby maximising maintained environmental quality, and the potential enjoyment of pure protected resources.

- 3. **Medium-scale, optimal capacity, limited development**, combining the best-selected features from the two other scenarios, but limiting overall development to upmarket, high quality offers, well within the limits of sustainability.

Results and follow-up

Two sets of constraints - one local, and the other national - have led to inaction and the continuing deterioration in the area of Lalzi Bay, thereby curtailing one of Albania's best opportunities for sustainable coastal tourism development based on a CCA approach.

- a) **Local constraints:** The site was previously a State Farm in the earlier Communist period. After the break-up of the farm, the former farmers remained on the site as smallholders, but without means of economic subsistence. They therefore took to cutting down the woodlands on their land, even though these were officially legally protected. The non-enforcement of woodland conservation has led to the total devastation of the wooded areas of Lalzi Bay, and the loss of the oak and pine forests.
- b) **National constraints:** The descent into armed, civil-war-like conditions in Albania, has discouraged interested foreign investors from backing Albanian coastal tourist resort development. The CCA work provides a basis for action at a future time of greater political stability.



3.5 The Maltese Islands:
Coastal Area Management Programme

Study area

Malta is an archipelago with a land-area of 316 sq km, and with a resident population of 380,000. Malta is the biggest island in the Maltese Archipelago. Due to its small size, Malta is one of the most densely populated countries in Europe.

The development of tourism

Tourism is one of the country's major economic sectors, generating 24 per cent of its Gross National Product, while earnings from tourism support 27 per cent of full-time employment. Over 1.2 million tourists visit Malta per annum, each spending an average of nine nights on its islands. This results in a total density of about 1,300 people per sq km. The islands offer over 48,000 tourist beds, but have an annual occupancy level of about 52% (in serviced accommodation). Given the small land area of the country and the fact that touristic activity is spread throughout the country's whole territory, the Carrying Capacity Study is therefore for all of Malta, rather than for any specific region or locality within it.

Methodology

The methodology adopted for assessing Malta's tourism carrying capacity was based upon PAP guidelines. The Maltese Government, recognising that tourism in the Maltese Islands had reached a critical stage, considered that a careful study was necessary to determine the future framework-scenario, within which Malta's tourism should develop in the period between 2000 and 2010.

The Ministry of Tourism and the Maltese Tourism Authority were the main initiators of the study with the advisory support of PAP. A multidisciplinary team was set up to work with the various tourism stakeholders. The exercise involved combining existing data with the collection of new data, the identification of various options, and the assessment of their impacts and consequent choice of scenario. Throughout the whole exercise, there was a strong degree of public participation.

Due consideration was given to the various influential factors affecting the operation of the tourism industry within the wider economic, physical, environmental, and social contexts. The guiding principle was that of the harmonisation of the overall local tourism context with national interests, whilst respecting the limitations imposed by environmental, socio-cultural, and economic constraints.

Scenarios

Malta's tourism industry faces the following constraints:

- A strong economic dependence on foreign earnings provided by the tourism sector;
- An excess of supply over demand for tourist beds, low tourism occupancy rates, and low prices;
- The host society's tolerated levels of tourism;
- Limited land resources for all purposes.

Other variables, such as energy production and water supply, could also be limiting factors. This situation is characteristic of Mediterranean destinations. The resulting mix of quantifiable and non-quantifiable limiting factors makes the assessment of tourism carrying capacity more complex.

Different scenarios were envisaged:

- A free development scenario;
- A limited growth scenario;
- A zero growth scenario;
- An upmarket scenario.

The CCA Committee established that the limited growth scenario is to be followed for the next decade. Summarily, the scenario sets out the following guidelines for tourism development:

- Tourism's contribution to the economy must be maintained by increasing foreign earnings, and per capita expenditure by tourists;
- Investment has to be channelled towards resource-efficient segments;
- Social and private benefits and costs must be assessed, to assist in directing resource allocation;
- The volume of tourist bed stock within the respective hotel brackets must be stabilised, and the quality of service, occupancy levels and room-rates improved;



- Summer volumes must be stabilised below saturation levels.

It was also agreed that Malta's tourism product must be enhanced by better presentation of the available options. Improvement of the quality of what is offered to tourists should be prioritised before it is expanded upon.

Results and follow-up

The directions set out in the scenario of the CCA have become tourism policy. The major challenge faced by Malta lies in transforming that policy into the right official decisions and in putting them into practice.

3.6 Central-Eastern Part of the Island of Rhodes, Greece: Coastal Area Management Programme

Study area

Rhodes is the fourth largest Greek island in the Dodecanese Archipelago of the Southern Aegean region. The island takes in an area of 1,404 sq km and about 100,000 inhabitants, representing about 50 % of the area and 60 % of the population of the Dodecanese Archipelago.

Development of tourism

In spite of its distant location relative to the Greek mainland, due to excellent air connections and its developed tourism product, the island of Rhodes is, in touristic terms, one of the most developed parts of Greece, representing about 20 % of total Greek tourism. The majority of the tourism on Rhodes and of the whole Dodecanese is concentrated in a very small area in the north of the island around the city of Rhodes, which - with 42,000 inhabitants, is the largest settlement in the Dodecanese Archipelago. Tourism on Rhodes and in the Dodecanese has shown a sharp increase over the last ten years - in 1999 there were 1.6 million tourist arrivals and 16.4 million overnight stays in the Dodecanese Archipelago, in comparison with 1 million tourist arrivals and 10 million overnight stays in 1989. Nearly 95 % of tourists are international - hailing mainly from Germany and the UK. The Central-Eastern part of Rhodes, representing about 30 % of the area and 15 % of the population of the island, was chosen as a study area, due to the fact that it is a candidate area for the extension of tourism development after the Northern area has been saturated in terms of tourism. The zone around the town of Lindos is the second most important tourism resort on the island.

Methodology

The Rhodes case study was launched in 1993, after a period of rapid growth in tourism. It was expected that the study area would be targeted by building developers as a consequence of the tourist saturation and a decline in profits in the northern part of the Island. The study for the definition of tourism carrying capacity had as its objective, on the one hand, to provide decision-makers with a basis for defining concepts of a balanced development of tourism on the island of Rhodes and, on the other hand, to serve local institutions, planners and experts as a framework for planning and management for sustainable tourism. The CCA on Rhodes was also the second study in the framework of the relevant PAP priority action, and like Vis, it was a follow-up to the CCA guidelines.

An important innovation within this study was the data analysis which included three groups of indicators (spatial-ecological, socio-cultural and economic), thus following the UNEP and WTO CCA guidelines. Another innovation was the proposal to have two equally treated development scenarios, both considered as a form of intensive, but controlled tourism development. Therefore, the Rhodes CCA study can be considered as a key case which resulted in the final definition of PAP methodology for Carrying Capacity Assessment, and the subsequently produced "Guidelines for Carrying Capacity Assessment in Mediterranean Coastal Zones".

Scenarios

Three scenarios were proposed:

- Intensive tourism development, following the model realised in the northern part of the island;
- Small-scale tourism development;
- Controlled tourism development.

The study has shown that the first scenario, i.e. further development of tourism in Central-Eastern Rhodes, extending the tourism saturated model of the northern part, would produce lesser economic benefits than the controlled development model which would assure a similar income, albeit with smaller lodging capacity.

The proposal of the second scenario, a small-scale tourism development, was considered unrealistic, due to the island economy's strong dependence upon tourism.

The third scenario, controlled tourism development, was taken as the only possible option, and it was presented to the decision-makers in two alternatives (with a target year of 2010):

- a) With a maximum of 25,000 beds oriented towards middle-class tourists;
- b) With a maximum of 36,000 beds, targeted at lower to middle-class tourists.

The maximum level of tourism usage was determined on the basis of the following criteria: the intensity of the tourism industry; tolerance (the desired level of satisfaction) of tourists; and constraints related to economic and socio-cultural aspects. It was considered that both options could meet the objective of enabling adequate income from tourism for the local population, and not cause the type of local deterioration evident in the saturated North. In respect of the need to preserve the natural environment, a large protected area covering the south-western coastline and the interior of the Island, was proposed.

Results and follow-up

Although there is no precise data indicating what has happened in the area over the last ten years, according to the information that is available, it seems that regrettably, the CCA study was not used as a basis for planning in the area. On the contrary, due to the sharp increase in tourism activities in Rhodes and in Greece generally, some areas in the Central-Eastern area, proposed as buffer zones in order to achieve higher tourism quality, were subject to a building onslaught. It was probably considered unrealistic to re-position the tourism product, especially as the zones proposed for protection in the south-west and interior of the island remain largely untouched by the visible increase in activities related to tourism.



3.7 Rimini Province, Italy

Study area

The Study covers the whole coast of the Province of Rimini, some 33.5 km in length, an area of some 534 sq km with a resident population of 272,031 persons in 2001. The Province is carrying out an Integrated Coastal Zone Management (ICZM) project in association with PAP and with the LIFE-Environment Programme. The ICZM process is integrated with territorial planning, in the framework of the general strategy for sustainable development of the Province.

The development of tourism

The coastal area of the Province of Rimini is a typical mass tourism destination and has some 2.66 million tourist arrivals per year. This region is one of the most highly developed and intensively used coastal tourist destinations in Italy. This coastal zone has reached the limit of its carrying capacity: environmental quality has been lost, mass-tourism is evident, and its prestige has diminished, with a resultant drop in the number of visitors attracted. As tourism is the area's main economic activity, the entire economy of the Province is therefore threatened. The CCA has been conducted at a critical stage in coastal over-development, at a juncture where radical policy changes are needed to achieve sustainable development.

Methodology

The CCA study has been carried out with the intention of adapting PAP methodology across the entire territory of the Province, paying particular attention to the possible development strategies and the socio-economic effects, as well as the consequences that such strategies could have on the environment.

The CCA project objectives include defining a work process for an action programme promoting a long-term strategy for the sustainable development of the region's economy and environment, re-orienting tourism development within this framework. The study employs a five-step methodology:

- Data analysis and mapping;
- Definition and application of sustainable tourism indicators - three of a socio-economic nature, and five of environmental aspects;
- Tourism development analysis;
- Defining tourism development scenarios;
- Definition of a model for the calculation of a sustainable tourism carrying capacity.

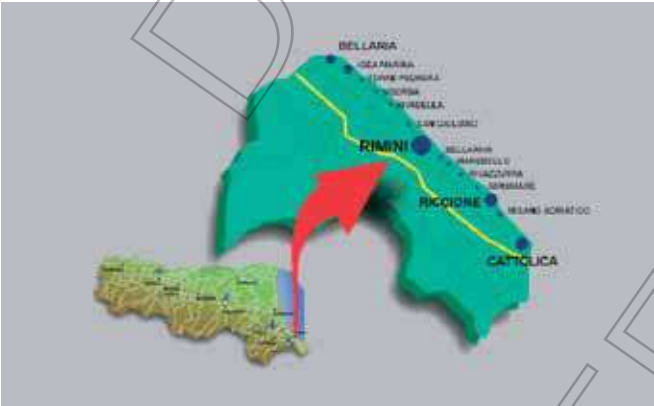
Scenarios

The Rimini Province represents an area of mature tourism, which is essentially 'saturated' from the point of view of land use and pressure on environmental resources. Under these conditions, possible development scenarios must take into account the need to reduce the pressure on the environment by resorting to appropriate public policies, above all to territorial and infrastructure policies (safeguarding and restoring ecosystems and natural resources, the adoption of appropriate transport systems and waste collection and disposal systems) and also by involving the private sector as much as possible. Four types of tourism development scenarios have been defined:

- 1. Conservationist;
- 2. Rural tourism development;
- 3. Coastal tourism pressure reduction;
- 4. Tourism system re-qualification.

Results and follow-up

The final tourism carrying capacity has not yet been calculated. The study is progressing well. It has already concluded that the calculation of tourist overnight stays in the Province is a critical question. The currently adopted way of making this calculation is based on the quantity of urban solid waste produced. The relevant tourism carrying capacity software has been developed. This latter tool - based on GIS modelling, formally shows how thresholds and constraints are exceeded, on a daily basis.



3.8 Island of Vis, Croatia

Study area

Vis is an island in Central Dalmatia, Croatia, covering 90.4 sq km, and with adjacent islets covering an additional area of 102.7 sq km, with 3,623 inhabitants according to the latest census conducted in 2001. The Island is known as one of the most remote in Croatia, because it is located about 40 km by air and 55 km

by ferry from the mainland. It is divided into two administrative units that are almost equal in size and population, namely, the municipalities of Vis and Komiza. The latter includes Croatia's remotest islets Jabuka, Sveti Andrija and Palagruza, which are in the middle of the Adriatic Sea. Vis alone has 1,770 and Komiza 1,505 inhabitants, whilst all remaining 17 small villages have a total of only 348 inhabitants.

Development of tourism

In the period of communist Federal Yugoslavia, foreigners were not allowed to visit the islands for military reasons. This discouraged the development of tourism, despite the powerful attraction of the Archipelago for visitors. Combined with the problem of remoteness, is the factor of heavy depopulation - whereby the population has dropped from 7,004 inhabitants in 1961 to 4,175 in 1981, and down to the existing 3,623 in 2001. In spite of the fact that the area was not damaged during the war, and was a safe place after the army departed, the development of tourism remained limited. In the year 2000, a mere 17,630 visitors arrived. There were 103,842 overnight stays across the whole Archipelago, about two thirds of which were those of international tourists.

Methodology

The Vis case study was launched in 1990, just before the start of the war in the former Federal Yugoslavia. It was considered to be a pilot study in the framework of the PAP priority action on tourism. The study included data analysis, although it did not pursue the completion of the three groups of indicators (physical-ecological, socio-demographic and economic) as in the studies that followed, and virtually only one development scenario - one for relatively small-scale development, was taken into account. Therefore this CCA study, together with that for the Island of Rhodes, was later used as a type of model for the definition of PAP methodology for carrying capacity assessment.

Vis was particularly suited for use as a model case, for on the one hand it is a clearly defined island area, and on other hand it is an entity which is strictly divided into two administrative units, almost equal in size, in length of coastline, and in population structure, but very different from a socio-cultural point of view. Namely, for the definition of the carrying capacity, the crucial element was the contrasting situation between the island's two municipalities. Vis is a reference point, and has stronger links with neighbouring areas and significant non-indigenous populations. Komiza, meanwhile, is a unique, isolated fishing community, which is keen to maintain its traditions, dialect and way of life. Another factor was the geographical

structure of the two settlements - Vis is more dispersed and Komiza is very compact with better-preserved local architecture. The above features have resulted in a more intensive tourism development for Vis, and a more restricted one for Komiza, both solutions being fully accepted by the local community.

Scenarios

Three tourism development scenarios have been considered, with the following carrying capacity values:

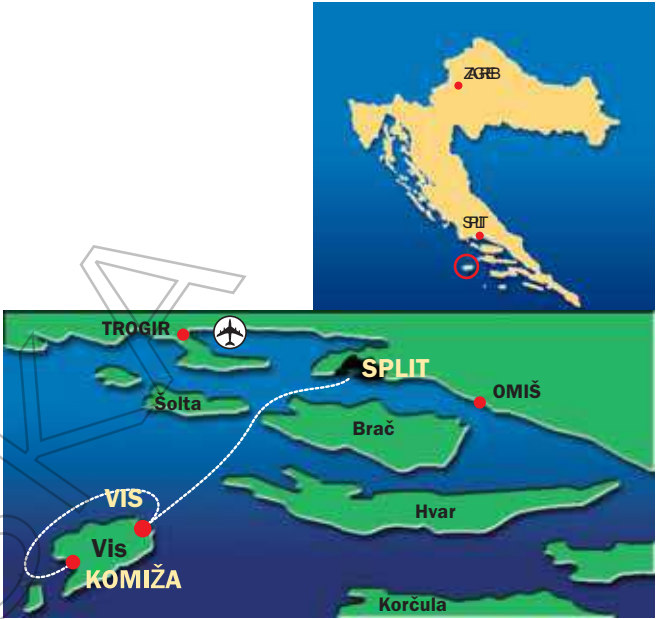
- **Intensive Tourism Development Scenario:** 16,000 to 20,000 Island-based tourists;
- **Sustainable Development Scenario:** 4,900 tourists;
- **Alternative Tourism Scenario:** 2,500 tourists.

The specific features of the island of Vis and its environment influenced the decision for a goal that is closer to the sustainable development scenario. After the analysis of data, the socio-cultural aspect was revealed as the critical element for the carrying capacity, especially for the southern part of Vis, with regard to the development of tourism on the islands which are subject to heavy depopulation and economic decline. Therefore the sustainable development tourism scenario was chosen as the only form that can achieve sustainability from the ecological, socio-cultural and economic points of view. Water supply was also mentioned as a limiting factor, but it is worth pointing out that this could be solved in the future by the planned sea-bed water pipeline from the neighbouring island of Hvar. That has resulted in a scenario that proposes a maximum of 4,900 beds in larger hotel capacities and a marina in the area of Vis. With such a scenario three main tasks need to be accomplished:

- i) To provide an adequate source of income from tourism for the local population;
- ii) To guarantee a unique Mediterranean island experience for tourists;
- iii) To preserve the unique island ecosystem, and maintain its fragile social balance.

Results and follow-up

Due to the economic problems facing Croatia during its post-war reconstruction period, the island of Vis is practically in the same situation it was in before the war, except that domestic tourists have been partially replaced by international tourists. Nevertheless, the guidelines given by the CCA were incorporated into the basic physical planning documents, and accepted by the local authorities. Considering broader policies towards promoting eco-tourism and other ecologically conscious forms of tourism, it is likely that the key directives from the CCA study will be followed in the future.



4. KEY ISSUES FOR GOOD CARRYING CAPACITY ASSESSMENT PRACTICE

4.1 How to proceed with CCA decision-making?

Tourism is often considered a 'soft industry' when compared to industries such as the steel industry and other manufacturing industries. Tourism does not generate severe environmental impacts, but it does demand the maintenance of high quality environmental conditions. Nevertheless, the idea that tourism is responsible for impacts is a half-truth, and it is important that measurement and assessment of its environmental, social and economic impacts should be conducted.

In many Mediterranean tourist destinations that have reached the mature stage of development (in the Balearic Islands, on the Adriatic Riviera, or the Côte d'Azur, etc.), the indicative symptoms of destinations on the cusp of the decline phase, have become obvious in the last ten to twenty years. The elements are: environmental and landscape deterioration; resorts dealing with mass-tourism; the destination's gradual loss of prestige; and the drop in the quality of the visitor-experience. In all these destinations, the perceived loss of tourist attractiveness has threatened local development. Carrying capacity assessment was conceived of as a response to the lack of available planning and management tools needed to achieve sustainable tourism development.

Carrying Capacity Assessment guidelines emerged from the Rio Conference, with all the key principles of Agenda 21: the concept of integrated local development; the visualisation of alternative future scenarios; the development work with indicators related to sustainability and quality of local life; the importance of partnership with the private sector and of citizen participation; and the objective of achieving a whole series of action programmes in the short, medium and long term. Carrying capacity strategy is a response to the need for change in many mature tourist destinations.

The experiences gained in carrying out several CCA studies, have shown that tourism is, to a certain extent, one of the activities that is reasonably adaptable to sustainability criteria. Consequently, it was this concept that was in the minds of the assorted decision-makers choosing to undertake a CCA study. This is due to the fact that sooner or later stakeholders dealing with tourism, if oriented to the medium and long-term, come to understand that their 'capital' is not only their infrastructure investment, but also their heritage made up of natural and cultural environments. The experience also revealed that it is extremely difficult to quantify

the 'carrying capacities' of specific tourist destinations.

During the development of the CCA studies, motivations other than those of assessment of the carrying capacity of the area, which were not always defined at the beginning of the study, became essential and very strategic in nature. In many cases what seems to be one of the most common motivations for applying CCA methodology is the expansion of the limited tourist season, so that, ideally, year-round season can be achieved. Another strong motivation appears to be the development of a methodology, which scientifically analyses the tourism sector in the long-term, while simultaneously successfully involving all the stakeholders in the tourism process, in order to facilitate and secure the formulation and implementation of an efficient sustainable tourism plan.

Furthermore two other motivations may emerge depending on the type of decision-making for CCA. The first is apparent when the decision to carry out a CCA has been a strongly political one, as was the case in Rimini, Malta and Calvia, where typically, destinations had attempted to limit their carrying capacity. In these areas, the actors at the local level (i.e. the local communities which did not accept mass tourism) and actors representing industries, demanding better quality, push to re-orientate development so that it is conducted in a more sustainable way. For example the fact that the Maltese economy depends upon tourism, automatically leads to the need for proper planning. This fact justifies the application of the CCA concept compared to previous tourism studies conducted there. In other cases the political influence on the decision to undertake a CCA was weaker, as in the instance of Elba Island, or was non-existent as in Lalzi Bay, at Marsa Matrouth and in Vis, where these studies simply represented PAP/RAC case studies. Thus, in these cases, CCA provided a framework for the sustainable tourism development of the destination.

The political decision to conduct a CCA, generates a focus specifically on the public participation process, and demands the involvement of key stakeholders, and on the other hand requires public awareness and support. In order to re-orientate the tourism development of a given destination, a consensus must be obtained of all the stakeholders, and the assessment and the scenario-development phases have to be integrated into a strong participatory process. As will be shown in paragraph 4.6, the decision-making process needs to involve relevant levels of government, the private sector and the resident populations at the tourist destinations.

Box 1: The role of actors in the study team

Effective implementation of CCA depends on the political will to reorient tourism development. In **Malta**, following the decision to conduct the study, a CCA multi-disciplinary study group was set up with the objective of identifying the parameters of the study, as well as collecting and analysing the relevant data. The members of the study group, besides being technically-skilled, also worked in the authorities or companies whose participation was crucial to success, not only for the collection of data, but also for the eventual understanding and implementation of the recommendations.

Table 3. The decision to conduct a CCA

Area	Level of decision
Island of Vis	Scientific approach
Central-Eastern Part of the Island of Rhodes	Scientific approach
Lalzi Bay	Scientific approach
Fuka-Matrouh Coastal Zone	Scientific approach
Calvia	Political decision: Calvia Municipality
Island of Elba	Scientific approach: Island project Financed by the European Community
Maltese Islands	Political decision
Rimini Province	Political decision: Provincia di Rimini

4.2 Definition of geographical limits for CCA

Although a general definition of tourism carrying capacity is widely accepted, the methodologies for its assessment differ from one case to another. The different methodologies are dependent upon the typology of the area, the availability and quality of data, the budget assigned to the preparation of CCA, as well as to the different approaches of the authors. Generally in more developed countries and regions data is available and is of high quality,* whilst the budget for the preparation of CCA is larger. In less developed regions there are problems with data collection, the budgets are often limited, the participatory process is weak, and in most cases the CCA is prepared by authors from outside the area. In spite of these differences, however, it can be stated that there are three levels of geographical limits for CCA:

- a) SMALL SIZE - local level (municipality, small island, or short stretch of coastline)**
- It is relatively easy to gather necessary data, if not from statistical and similar sources, then via field work.
 - The carrying capacity is usually primarily dependent upon physical-infrastructure indicators, because economic and socio-cultural indicators generally include much broader areas. Therefore those areas are dependent on the situation in the wider zone.
 - Only very isolated small-sized areas, such as small islands or some national parks and similar protected areas, can be considered as units where the above mentioned indicators can be important for carrying

* It is worth mentioning that the quality of the data is not necessarily better in all developed areas. In many Anglo-Saxon countries, it is not possible to gather precise data on the total number of tourist overnight stays while this is possible in most Central European countries. Nevertheless, in medium and less developed countries it is often impossible even to gather precise data on the accommodation capacities, especially regarding complementary beds and secondary residences.

represents a compact territorial unit such as a county, province, or region, etc.

- Evidence from practice indicated that best results in carrying capacity assessment could be achieved in medium-sized areas, whilst in small-sized ones it is easier to succeed when they represent a distinct territorial unit, only slightly exposed to the influences of neighbouring areas. Considering the problems of influence between neighbouring areas, and organisational as well as financial difficulties, for large-scale areas, it is more useful to prepare separate CCAs for particular medium-sized areas within them, and then a combined carrying capacity for the broader region.

All examples presented basically fit into the medium-sized area category, or that of a clearly defined small-sized area which is not exposed to neighbouring areas influence, such as the island of Vis. The Central-Eastern part of the island of Rhodes, Lalzi Bay, Elba and Calvia function as smaller medium-sized areas, Marsa Matrouh functions as a larger medium-scale area, and Malta and Rimini serve as special examples which though relatively small in size, are heavily populated areas, and represent a clear destination from the product and market demand viewpoints.

- Difficulties in the preparation of CCAs for Lalzi Bay and for the Marsa Fuka-Matrouh Coastal Zone have shown that it is usually better to deal with clearly defined territorial units. In both cases there were many problems with data collection, because neither of the areas constitutes an administrative unit, so that the work had to rely far too heavily on estimates, rather than on the use of concrete data.

4.3 The choice of methodology

- The survey of different CCA experiences in the Mediterranean area has highlighted the variety of approaches that can be applied. In fact, even the non-PAP experiences of CCA have illustrated the use of very similar processes based upon economic, social and environmental variables. These variables are not normally taken into account by mainstream tourism planning and tourism studies, but they are similar in nature in all CCA studies.

Only some of the studies have been carried out using PAP principles as set out in the "Guidelines for Carrying Capacity Assessment for Tourism in Mediterranean Coastal Areas". However all CCA studies rely upon a similar approach and have similar targets. There is no good or bad methodology for CCA, but there are different degrees of application. Of course the choice of methodology has to be related to the success and the results of the study.

There is perhaps no unique or optimum methodology for measuring carrying capacity. However, in all cases, some broad guidelines may be followed. Ultimately, it is the particularity of the area, the goal of the assessment, etc. that will eventually precisely define the methodology to be followed. Furthermore, the methodology should be chosen according to the target groups and the objectives defined for the CCA at its early stages. Methodologies applied seem to be quite similar in their structure. However, even the studies of Elba and Calvia, which have been conceived independently of PAP methodology, reveal the same working approach based on indicators for assessment, development scenarios and a participatory process. PAP methodology can be summarised as having the following phases:

- Data management;
- Assessment and analysis;
- Tourism development scenarios;
- Participatory process;
- Calculation of carrying capacity;
- Integration with planning and management.



The methodology adopted is strongly influenced by the political and decision-making contexts within which the CCA study has been carried out. The use of CCA methodology without political support becomes a scientific tool for the assessment of the tourist activity and of its impacts (positive and negative). In this case, the CCA methodology can play a significant role as a first step for the implementation of a sustainable development strategy of the coastal area. The planning process attempts to bring into the CCA model a number of objectives, steps or phases and the selection and use of indicators. National or international experts in the field of sustainable tourism planning can set the model, the criteria and the indicators.

Box 2: External experts and the choice of CCA methodology

The degree of involvement of external experts will also influence the methodology itself. In the first phase of the CCA process at **Rimini**, the use of the PAP model was adopted. During the secondary phase of work there, and due to the continuous exchanges between the PAP experts and the local expert, the methodology was adjusted to the specific needs of the situation in the Province of Rimini. The result was a very specific application that also used sustainable tourism indicators. They have been used not only to assess the data and to describe the state-of-the-art of the destination, but also in order to build the development scenarios.

Box 3: Methodology used in the case of the Island of Elba

The robustness of the methodology used in the **Elba** case is based upon the capacity to assess the exact number of overnight tourist stays on the island. The estimation is based upon the calculation of overnight tourist stays, derived from their per capita waste production. The most innovative aspect of the Elba carrying capacity methodology was the elaboration of spatial maps that showed, day by day, the threshold levels reached (for daily water consumption per capita, for the density of tourists per square meter of beach, for the daily output of urban solid waste, etc.).



Table 4. Methodology adopted

Area	Data Management	Assessment and Analysis	Tourism Development Scenarios	Participatory Process	Carrying Capacity Calculation	Integration with Planning and Management
Island of Vis	☺	☺	☺	☹	☺	☹
Island of Rhodes	☺	☺	☺	☹	☺	☹
Lalzi Bay	☺	☺	☺	☹	☹	☹
Fuka-Matrouh Coastal Zone	☺	☺	☺	☹	☺	☺
Calvia Municipality	☺	☺	☹	☺	☹	☺
Elba Island	☺	☺	☺	☹	☺	☹
Malta Archipelago	☺	☺	☺	☺	☺	☺
Province of Rimini	☺	☺	☺	☹	☹	☹

☺ Successfully applied

☹ Not applied

☹ Applied but not completely satisfactorily

4.4 Data management

The data management stage involves the identification of data requirements, the collation of relevant secondary data from existing sources, the collection of relevant new primary data, and the analysis and synthesis of both sets of data.

One of the main challenges facing those conducting a CCA study will always be the question of the total sum of financial resources to be allocated to the study, because of the cost of data to be collected. One of the main limitations will typically be the limited available budget. A small-sized region will generally have limited resources but it may have advantages in collecting data as a result of its small size.

In all cases a major problem faced is the limitation of available resources. It is therefore essential to use existing data and to apply appropriate methodologies for collecting relevant substitute data. Tools such as maps, economic models, census data and surveys will prove to be very useful. However the CCA study can still be conducted with less detailed available data and with limited resources. In the case of Marsa Matrouh CCA for which detailed data was not available at all, for the 'tourist resorts' only, a very rough estimation was done.

The involvement of local experts is to be recommended. The sourcing of existing data sometimes requires the strong involvement of a local team of experts. In the data management process a local group of experts may provide data more easily, more cheaply, and more swiftly, since they may be more aware of the most appropriate and reliable sources. When no local experts are available, county or regional or national planning experts can replace the more apt local experts.

For a good CCA, economic, environmental, social and physical data are of the utmost importance. More important still, is that some data be available on all aspects entering the 'CCA formula'. In the execution of Rimini's CCA, environmental data had been collected, while data on economic aspects was harder to source. In the case of Malta, socio-cultural data in particular was missing, whereas data on other aspects was rich and continued to be enriched through the surveys and studies conducted specifically as inputs to the CCA.

Depending on the level of development of the area under review, some types of data may be more important than others. For example, in the case of Lalzi Bay, it was crucial to obtain environmental data because the area was practically a virgin zone without tourism, and with a small-sized resident population.

The analysis stage of the data management process is important, as it will form the basis for the conclusions of the CCA. Detailed analysis such as that conducted for the Rimini and Malta cases provide not merely an overview of situations but also offer detailed snapshots

Box 4: Advantages in data collection due to small area size

In the case for **Malta**, and although the financial resources were very limited, the collection of data was easier than in other cases due to its small land area. Access to any part of the archipelago was possible in less than an hour, as it has only two major entry and exit points (the airport and the seaport). Larger areas may not be as easily accessible due to the vastness and variety of the physical geographical boundaries within which the CCA is being carried out.

focusing on particular elements and implications. Very detailed data does not guarantee a very good CCA. It is only the foundation on which the synthesis and scenario are to be built. Once all the data has been collated and analysed, the synthesis stage can follow. At this stage all data has to be integrated and amalgamated in order to provide an overall and as detailed a picture as possible. It may be difficult to identify the most appropriate person in the team to conduct this synthesis because this stage is relatively open to interpretation, often subjective in terms of the right emphasis to the various data and issues.

Box 5: Data collection and local experts

In the case of **Rhodes** the official Greek census and tourism data were made available for assessing carrying capacity. Similarly, for the island of **Vis**, the Croatian Statistic Authority provided very detailed population and tourism data. Since the data related to the whole island of Vis and the study focused on a clearly defined island area, linking the data to the area under review was much easier. Furthermore, in Rhodes both the Greek team (from Athens and from Rhodes) and the PAP team were deeply involved in the fieldwork. In Vis, island experts were not available.

4.5 Use of sustainable tourism indicators

Indicators measure the information needed by all the decision-makers. Indicators represent a key tool for both understanding and analysis in the CCA process. There is a large amount of literature on sustainability indicators, and the two main groups may be described as follows:

- **Simple indicators** that analyse a single concrete aspect of sustainability (i.e. CO₂ emission, waste production, employment rate, etc.);
- **Aggregated indicators** that aim to measure complex human activity via one measure (i.e. Ecological Footprint, ISEW*, etc.).

The relevance of indicators depends on the attributes of the specific tourist destination. For each destination a physical, ecological, economic, and social carrying capacity can be defined through indicators. According to the OECD framework of P-S-R (pressure-state-response), indicators are generally designed to take three main components into account:

- The **pressure** on the environment, such as the consumption of water or territory and the production

of waste;

- The **state** of the environment specified in terms of an alteration of the quality of the natural state or dynamic;
- The **response** towards environmental pressures or changes in the state of the environment. The response can be made by either private or public entities.

The choice of indicators strictly depends upon the main objective of the analysis, for example:

Objective

Preserve specific attributes of the natural environment

Reduce the risk of the degradation of the environment used by tourists

Indicators:

The size of area protected

The loss of attributes, which are the focus of protection

Levels of use, the extent of the impacts on the biological or cultural values that are critical to continued use
Market trends showing fluctuations of interest in visits to an area

At most, sustainability indicators are designed to define the analytical tools, which need to be clear and useful means for communicating comparable results (between different geographical areas and over time) and capable of assessing relations between variables. When working with sustainability indicators, the availability and quality of data are one of the most important issues to be addressed. As reported in paragraph 4.7, table 5, the level of data processing in locations where CCAs have been developed, varies from very deep quantitative analysis as done for Calvia, Rimini and Malta, or more qualitative approaches as used for the remainder of CCA endeavours.

When data for working with and calculating of indicators is not available, or is of low quality, then indicators will remain as residual and irrelevant. Therefore, the quality of environmental, social and economic information is one of the most important issues that need to be addressed in CCA.

According to the WTO, sustainable tourism indicators need to be useful to all tourism sector managers, and must be easily applicable to them. A good indicator should reflect a concrete reality and must therefore

* Sustainable Economic Welfare Rate

relate to specific spatial scales. The sustainable tourism indicators are a communications and educational tool for the general public and can provide the basis for sustainable tourism planning. The communication measures - needed for raising public awareness among the resident population and also among visitors - must also be defined.

As explained in chapter 4.6, indicators can be very useful in the communications strategy. The indicators must be chosen for the specific duration and available resources of the CCA project. The monitoring of indicators will be an extremely easy phase if the sources are defined and if the model is robust.

The Mediterranean experiences in CCA show that in the following criteria should be used while defining a good sustainable tourism indicator:

- The calculation procedure should be objective and scientifically sound;
- Indicators should relate to clear policy objectives;
- Indicators should invite a clear interpretation and be comprehensible to non-scientists;
- Indicators should cover the functioning of a system as a whole;
- Indicators should be based on a parameter of values that is stable over a long period of time.

The path towards sustainability needs new mechanisms of planning and management, to ascertain whether we are going towards or away from sustainability. We need specific indicators to analyse tourist activity in order to be aware of its positive and negative impacts and to measure the three main areas of sustainability: the social, the environmental and the economic. When these aspects are known some progress towards sustainability can be planned and implemented.

4.6 Public participation process and public awareness

The public participation process is a way of promoting the involvement of all stakeholders in the policy process and of harmonising the conflicting objectives, strategies and capacities in the management and planning of tourism. The key activity in this process is to involve the interested parties in defining their economic, social and environmental needs, their priorities, and their own proposed solutions. The process is as important as the information obtained. People know what they want and need. They appreciate being asked. They are even more grateful when they have the opportunity and responsibility to have a say in what the administration intends doing with the tourist destination and natural resources, all of which are part of their home territory.

The emphasis in CCA methodology is upon the incorporation and cultivation from the very beginning of a 'shared strategy' for the future development of tourism within the destination. This involves the comparison of the proposals with the subjective assessment of the prevailing situation, the identification of and agreement on the root causes of current problems, and the development and adoption of the objectives and criteria of 'Sustainable Development'. All must bear in mind that the process is long, and that step-by-step improvement needs the involvement of the public throughout the duration of the process, from its earliest stages through to the final decisive period. Public awareness has to become the leading force in all the CCA processes. With regard to private and public participation, clarification is needed on the major groups of activities:

- The public sector, which includes: public

Box 6: Indicators in the Rimini CCA

In its application in the Province of **Rimini**, the PAP methodology consists of a system of indicators, designed to represent the impacts of tourism upon the physical, ecological, economic and social attributes of the area (tourism system performance). The analysis focused on the understanding of critical thresholds, and of the Rimini tourism system. It revealed several bottlenecks such as the limits of social acceptance of tourism, and problems of traffic circulation. Chosen indicators are:

- **Socioeconomic Area:** tourism system characterization (supply, offer, overcoming seasonality), income, added value of tourism, job balance (the seasonal nature of jobs in tourism);
- **Environmental Area:** gross energy consumption, CO₂ emissions, waste production, water balance, water treatment, biodiversity, changes in rural land use, the use of coastal land for urban development, mobility management, air quality, noise pollution.

The choice of indicators and of territorial units and their boundaries has not been considered as a technical process, but as an important decision tool to be shared between all stakeholders. The role of experts should be to suggest good and scientifically correct hypotheses, assuring, at the same time an easy understanding of alternatives. The choice of indicators has been carried out with a view to achieving consensus. Rimini, like many other destinations, lacks reliable data regarding tourist overnight stays. For this reason, tourism overnight and tourists' numbers have been estimated on the basis of data on waste production and local water consumption.

Box 7: Examples of sustainable tourism indicators for carrying capacity analysis

- **Site protection:** measures the natural area protection in terms of protected areas, marine reserves, users' affluence to natural areas protected, etc.;
- **Environmental stress** (index of stress level impacts on the site from tourist activity):
 - Waste management: waste treatment, solid urban waste production, waste recycling rate;
 - Water management: urban water consumption per user, water balance, purified residual water, etc.;
 - Energy management: production capacity, energetic consumption, clean energy uses, etc.;
 - Land and biodiversity: land use changes, biodiversity indexes, etc.;
 - Mobility: existing vehicles, road network availability, train transportation capacity, etc.;
- **Human intensity:** index of human pressure in terms of number of people in the area divided by its area (the number of residents and tourists can be combined);
- **Tourism demand:** the index of tourism pressure, which completes the seasonal distribution of the demographic pressure, quantifies the seasonality, etc.;
- **Tourism supply:** residential accommodation capacity, tourism accommodation capacity, passengers arriving through airports, passengers arriving through ports, etc.;
- **Social impact:** unemployment rate, variation of seasonal workers, salaries, etc.;
- **Economical impact:** income from tourism in the area, the added value of tourism, external balance of firm investment, etc.;
- **Cultural heritage:** cartographic and quantitative cataloguing of heritage goods;
- **Planning process:** the indicator specifies its existence or not, and is based on the fact that planning is a central tenet of successful sustainable tourism;
- **Tourist satisfaction:** measures the quality of the tourism experience and reflects the changing conditions within the destination and changing tourist expectations (obtainable via questionnaires distributed directly to the tourists);
- **Local satisfaction:** measures the level of satisfaction of locals who are potentially affected by the tourism industry. This indicator is one of the most important and is a compulsory part of the participatory process.

administration, local government and local authorities, technical staff, etc, voluntary sector committees, and NGOs which may mobilise a wide public, raise public awareness and consciousness. Another important actor that can play a decisive role in the process is the academic and research sector - in universities, colleges, and research institutes that are active in the area. They wield a significance degree of influence on other parties, typically stemming from their good reputation and the high respect which is shown in some countries, by the public and the authorities, to their politically 'neutral' work, which often covers analytical work or/and recommendations on natural, social and economic issues.

The private sector, which includes: private operators (foreign and domestic), the private investment sector, chambers of commerce and/or tourism operators, associations and syndicates. However, their involvement in environmental or sustainable development issues has to date been rather limited.

Calvia and Malta are the only instances in which the participatory process has been successfully developed.



Key decision-makers must be involved in the initial stages of the study to ensure that they understand all the implications - both positive and negative, of decisions made. Given the nature of a tourism carrying capacity study and due to the multidisciplinary approach it requires, technical staff involved may be tempted to isolate themselves and move on to conducting the study independently of public opinion. Public awareness is vital to the participation process. It allows the respective stakeholders' views to be taken into consideration. This is not only required at the stage when the social aspects are being assessed but also at the other points in the study, particularly when choosing the most appropriate development scenario. A summary offering guidelines for the implementation of a successful public participation process throughout the CCA is given in Figure 3:

The formal or legal mechanisms used are very important to the implementation of agreed actions. This mechanism may be in the form of a 'follow-up action committee' or alternatively, a 'coordination unit', and requires 'legitimisation' in order to survive changes in administrative personnel. The public reaction to proposed sustainability criteria may be another critical aspect: active public involvement assists in the building of consensus, and hopefully, subsequent agreement and commitment to proposals.

4.7 Identification and selection of development scenarios

The identification and selection of development scenarios can be considered as the crucial point in CCA, regardless of the methodology used. Namely, after the development scenarios are identified and explained, it should be relatively easy to select the most appropriate scenario (or scenarios) for each area in which CCA is being assessed. After one or two scenarios are then chosen as the most desirable development option(s), it is essentially a technical question of working out this scenario into detail as an input to the planning process. The importance of the preparation of development scenarios is also evident from the fact that all the presented examples have treated the identification of development scenarios as a crucial issue in the assessment of carrying capacity, although the preceding steps often varied. The difference in these steps essentially depends on the methodology of data processing, which is mainly a consequence of the budget assigned to CCA preparation. This budget is generally larger in more developed countries, and in cases in which the CCA

is an initiative originating inside the area assessed. In such areas, the data analysis is more profound and based on precise and detailed data, often using sustainability indicators as tools for the identification of the development scenarios. On the basis of the experience gained in the case studies, it is evident that when the budget for CCA is limited or the initiative for CCA preparation originates outside the area, the data analysis is in most cases superficial and without indicators*.

From the presented examples of CCA, it is evident that data analysis was more detailed and partially based on sustainable indicators in all cases in developed areas, and where the initiative for the CCA preparation

Box 8: Successful participatory process in Calvia

The Calvia Municipality has developed one of the most significant participatory processes and public consensus for sustainable tourism development planning and management. The participatory process being part of an Agenda 21 approach, has become the leading issue underpinning the Calvia experience.

The participation process employed the following steps:

- Expert teams drew up an integrated methodology and six reports on each of the Key Thematic Areas describing the state of the Calvia territory.
- The reports were checked with the Citizens' Forum Thematic Commissions (composed of 150 citizens at several work sessions). The participants were able to individually evaluate three specific aspects in each Key Thematic Area.
- A Document for Debate was drafted (including the fundamental proposals of Calvia Local Agenda 21). This document was discussed at the beginning of 1998 and now has the approval of the Town Council and the Citizens' Forum.
- The information in this Document for Debate is being circulated by various methods and a survey of opinions has been distributed among all homes in Calvia.

The results of the Calvia initiatives can be summarized as follows:

- The high participation of operators, families and people in municipal administration initiatives.
- The presence of 6,600 agreement signatures supporting the Calvia development plan.

* The use of sustainability indicators is premised upon a long period of preparation of the CC and a substantial budget, which is not usually possible when the initiative for the CCA preparation originates outside the area for which the CCA is being assessed.

Information about intended CCA formulated in an easily understandable way. Emphasis given to the analysis of the existing situation at the destination, and to the full explanation of the process itself.



Application of the scientifically chosen criteria, involvement of the various stakeholders*, and securing the feedback from them.



The use of criteria in order to assess the existing situation** including the identification and analysis of key sectors.



The use of the same criteria and of sustainable tourism indicators for the selection of the appropriate strategies and the sustainable tourism development scenario.



The need to use sustainability indicators or other criteria as a checklist against which the commonly agreed policies and strategies may then be tested***.



The participation of the various groups in the formulation of the carrying capacity of the destination. The commitment of the groups to the defined development model.

Figure 3: Participation process in CCA

depended on local will, as shown in table 5. In those four areas (Calvia, Elba, Malta and Rimini), which have an extremely high concentration of tourists, the participatory process and political involvement were strong, especially in Malta and Rimini. Therefore the 'external' pressures regarding the definition of the development scenarios were also very strong, and the decision about the most desirable scenario was open to feedback from the general public.

In the other four cases, where carrying capacity was assessed and financed mainly by PAP (Vis, Rhodes, Lalzi Bay and Fuka-Matrouh), the participatory process was less pronounced - especially in the less developed areas of Lalzi Bay and Matrouh, while the political pressure regarding the definition of development scenarios was not so important. This resulted in the

absence of 'outside' pressures regarding the definition of the development scenarios, giving the authors of the CCA complete freedom not only in the identification, but also in the selection of the most desirable development scenario.

However, since in these cases, data sources were not fully adequate, particularly in the case of Lalzi Bay and the Fuka-Matrouh Coastal Zone, it can be argued that the decision regarding the right scenario in the PAP cases was based upon assumptions. Nevertheless, considering the special circumstances in which those CCA studies were prepared, much better results could not have been achieved, even if it had been possible to conduct much more detailed analyses, as explained in boxes 11 and 12.

* The communication document contains very little in the way of recommendation, just enough to trigger the interest of the stakeholders, but making clear that everything is 'open' to discussion and rearrangement

** Example: the "Actual Scenario" in Rimini has been assessed through indicators

*** This input is crucial for the content of a CCA study but also for the design of the drafting process itself. It is also an important educational tool for participatory learning

Box 9: Continuous participatory process in Malta

The participatory process followed in **Malta** in conducting its carrying capacity study was continuous, particularly through the CCA Study Group. The participating organizations included: the Planning Authority, the Public Transport Authority, Air Malta, the University of Malta, the Public Works Department, Friends of the Earth-Malta, as well as the Maltese tourism authorities. Surveys were conducted among the Maltese public and visiting tourists to obtain their views on tourism development, levels of tourism activity and the impacts of tourism. These surveys were a preliminary way of involving both the local residents and tourists.

The public participation process in Malta was carried out via a five- step programme:

- A summary of data findings was presented in a seminar to the tourism trade, government authorities, NGOs and to other interested parties.
- The CCA Study Group moved on to the analysis and interpretation of the available data. A series of discussions was held among the members of the study group to formulate a number of alternative development options.
- A more in-depth formulation and analysis of the preferred scenario were carried out, based on the principle of harmonizing the overall Maltese tourism context with national interests. The detailed formulation of the scenario was discussed and approved by the Ministry of Tourism in conjunction with the Malta Tourism Authority.
- The final proposals for the scenario were presented at a seminar to stimulate discussion among all interested parties: hoteliers and other tourism service providers, planners and architects, local councils and trade unions, environmental non-governmental organizations, representatives of the financial sector and members of parliament responsible for economic services.
- Comments made during the seminar were included in the final document of the Carrying Capacity Assessment of the Maltese Islands. This document defines the development model or scenario within which tourism development in Malta should be directed.

The continuous participation process in Malta helped to achieve political acceptance of the Carrying Capacity Assessment study, which has in fact been endorsed by the Cabinet. The participation in the dialogue of the largest possible number of concerned stakeholders helps to increase both the stability and the sustainability of such agreements. This happened in Calvia, where the citizen’s forum was able to reach a high proportion of the local population. To facilitate the eventual implementation of the recommendations arising from a carrying capacity study, it is essential that the exercise be conducted with the participation of the many stakeholders and interest groups currently or likely to be affected by the recommendations.

Table 5. Difference in the methodologies used for the definition of the development scenarios in the areas in which the carrying capacity was assessed

Area	The level of overall and tourism development attained in the area	The methodology used for the definition of development scenarios	The level of data processing
Island of Vis	medium developed	data analysis	medium
Central-Eastern part of the Island of Rhodes	medium developed	data analysis	medium
Lalzi Bay	undeveloped	data analysis & synthesis	superficial
Fuka-Matrouh Coastal Zone	undeveloped	data analysis & synthesis	superficial
Calvia Municipality	developed	sustainable tourism indicators	deep
Elba Island	developed	identification of constraints	deep
Maltese Archipelago	developed	data analysis & synthesis	deep
Province of Rimini	developed	data analysis & synthesis and sustainable tourism indicators	deep

On the other hand, despite the very detailed analysis and the broadly based documentation, strong political pressures could skew the interpretation of the data in the four 'developed' cases in a direction which compromises their sustainability. This is especially the case in the instances of Malta and the Province of Rimini, where, according to the conservationist approach, the current development of tourism already exceeds carrying capacity limits. Namely, the politico-economic circumstances will not allow even zero growth options, and any kind of decrease in the number of tourists is considered as politically unacceptable.

From the cases of Malta and the Province of Rimini, it may seem that detailed data processing is not necessarily resulting in the best possible development scenarios, and therefore clear carrying capacity numbers. But since such a rich database is usually a consequence of a strong participatory process, the intense marketing of the CCA preparation and the deep involvement of the local community, the

development options agreed by all the key stakeholders are very likely to be realized. In the PAP cases, where development scenarios were prepared in circumstances of superficial participatory processes, against a backdrop of weak marketing of the carrying capacity preparation, the main problem remains the lack of efficient delivery mechanisms which can realise even the best possible development scenarios.

PAP methodology is therefore important because it provides a clear and relatively easy framework for the preparation of sustainable development options even with a weak database and a small CCA budget. Nevertheless, the practical examples of Malta and especially that of Rimini* show that PAP methodology is also useful as a framework for CCA preparation based on more detailed and sophisticated data processing. That includes the use of sustainable tourism indicators, which should not be seen as a different tool for the identification and selection of development options and assessing carrying capacity, but as one which can produce better results when used as part of the framework of a PAP approach.

Box 10: Some techniques for developing a participatory process

The following techniques are suitable for **informing the public**:

- Printed materials (brochures, displays and exhibits, direct mail);
- The use of existing media (newspapers, news conferences, newspaper inserts, radio, and TV, interactive TV, advertising);
- Formal public information sessions (targeted briefings);
- Informal public information ('open house', site visits, door-to-door at home, 'field' information offices).

The following techniques are particularly suited to **listening to opinions of members of the public** and in order to involve the various stakeholders, as well as in decision-making:

- Surveys (interviews with key people, formal surveys, polls and questionnaires, workbooks);
- Large meetings (public discussions, public hearings, conferences);
- Small meetings (public seminars, focus groups);
- Advisory groups (e.g. task forces, working parties);
- Problem solving techniques (e.g. brainstorming, simulation games);

Consensus building techniques (e.g. the 'Delphi process', unassisted negotiation, mediation-assisted negotiation, arbitration).

4.8 Tourism carrying capacity calculation

People's expectations of tourism carrying capacity are that it will provide a 'magic' number for the total number of tourists. If such a number is calculated, this can be misleading because an area's carrying capacity depends, amongst other factors, on the activity undertaken by those tourists, the length of stay of those tourists, as well as the activities undertaken by the local population.

Box 11: Data collection and the tourism development scenario in Lalzi Bay

In the case of **Lalzi Bay** the data regarding the development of tourism was basically irrelevant, due to the absence of tourism development in the study area. Furthermore, after the draft proposals of development scenarios were prepared, the political situation in Albania became unstable, especially during the Kosovo crisis, and this prohibited any type of tourism development in the area and in Albania as a whole. Therefore the sustainable development option proposing higher density buildings of medium height in the area is still possible, although the continuing destruction of basic resources due to the felling of trees in the coastal zone, itself the product of political factors, is seriously diminishing the area's appeal for commercial tourism development.

* The CCA for the province of Rimini, which was prepared in parallel with this document, can be emphasized as a good example of the first CCA study which has used sustainable tourism indicators in a framework PAP methodology of carrying capacity assessment.

Box 12: Data collection and tourism development in Fuka-Matrouh

In the case of the **Marsa Matrouh - Fuka** Coastal Zone, it was and still is almost impossible to collect precise data about tourism development due to the prolific growth of resorts made up of second-homes for Egyptian citizens, a process which is still continuing. Those resorts are not included in the statistical publications and the calculation of their capacity via fieldwork is almost impossible since they are closed to the general public. Uncontrolled development of those mainly non-commercial tourism resorts throughout the area is putting in question any development scenario whatsoever, including the one proposed for sustainable tourism development. This scenario hinged upon the allocation of special zones for commercial tourism development as a resource, offering work opportunities to thousands of Egyptians coming to this area from the overpopulated Nile Delta.



In defining an area's carrying capacity, the major limiting factors determine the lowest threshold . The constraints must be clearly identified and their effect on tourism activity quantified. Studies described in Chapter 3 show that this step of identifying the major constraints has often been adopted. The development of a set of indicators or ratios was instrumental in most of the studies in helping them to arrive at the CCA results. Through these indicators, simulation exercises of different development scenarios can be conducted and the relevant conclusions drawn based on the previously identified thresholds.

The methodology, which is then used to actually arrive at the 'magic' number, differs slightly. In the case of the CCA for Elba and Rimini, a model was and is being developed. For the other studies, it was a direct conclusion of the chosen development scenario and the indicators that were developed. Most of these studies (such as Malta, Marsa Matrouh and Rhodes) have adopted tourist bed stock as the main measure for carrying capacity. This is because the maximum tourist bed capacity indicates the maximum number of tourists with the implications for traffic, waste production, and water and energy consumption.

4.9 Integration with planning and management of coastal zones

The basis for sustainable management of the coastal zone and its resources is an in-depth understanding of the environment itself. This includes knowledge of the physical environment, and social and economic factors, all within the spatial parameters provided by geography. Managing coastal zones requires an integrated approach: management decisions need to be based on a thorough knowledge of the coastal

system and of the dynamic forces which operate upon it. Coastal zones are highly dynamic systems often used and exploited to their maximum potential. The permanent and accurate monitoring of changing conditions, and the constant evaluation of the effectiveness of responsive and preventative management efforts and actions, are required to correct mistakes, and steer future policies.

Due to the complexity of both human activities and coastal ecosystems, an integrated management scheme is needed both to allocate coastal resources effectively, and to minimize environmental degradation. Choices and compromises have to be made between competing users and uses of the coastal zones, if an escalation of conflicts and resource degradation is to be avoided. PAP's methodology of CCA has been conceived from the start, as part of the planning phase of Integrated Coastal Area Management methodology. Furthermore CCA should be part of the tourism development plan. According to the studies that have been analysed in this guide, the dependence of CCA upon tourism development plans seems to be very weak.

This fact is due to a paradox: namely, the lack of planning of tourism in the Mediterranean area. In many cases, CCA methodology plays a significant role in the planning of the area. In Egypt and Albania CCA has somehow become an acceptable substitute for tourism planning. Furthermore, the existing CCA studies already conducted in these countries provide a robust sustainable approach that can serve as the foundation upon which the future planning of tourism can be built. In Croatia, tourism planning is included in the general planning, but currently, planning is not always applied.

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In Rimini the CCA has been executed from the start, as a strategic study conducted by the planning office of the provincial administration. The Province of Rimini has its own "Piano Territoriale Provinciale di Coordinamento" (Provincial Co-ordination Territorial Plan) a planning tool in which carrying capacity has been integrated. The Plan has a planning process that intends to use carrying capacity as an instrument for decision-making. Some hypotheses regarding rural tourism development within the Province have already been analysed via carrying capacity scenario methodology. CCA studies have been integrated into the spatial analysis of the Province, and within the domains of territorial and environmental policies.

This experience shows how CCA methodology can be extended and enlarged to take in general coastal management and planning. Integrated Coastal Zone management in Rimini has followed the same theoretical approach. The analysis carried out through the use of indicators, proved to be completely flexible and easily adapted to other analyses. The indicators methodology focuses on different thematic areas in order to describe the relationship between tourism and environmental and social aspects. Due to its flexibility, the Rimini-Province's working group decided to use the CCA methodology to implement ICAM in the area. The analysis will be extended to all other relevant data, which were not considered in CCA, namely:

- Economic activities (other than tourism);
- Infrastructure;
- Inventory of resources.

The Integrated Coastal Area Management Plan of Calvia (PILC) includes the concept of carrying capacity, in the sense of the sustainable uses of the coastal zone (i.e. human pressures, biodiversity, the physical environment, and cultural and landscape heritage resources). The key to making these uses sustainable is provided by the approach known as 'Reference Scenarios', as described in paragraph 3.1. The diagnosis of the initial situation, defined in the Reference Scenario for these uses, is compared to the 'Trend Scenario' and a 'Full Restoration to Equilibrium

State Scenario'. Teams of experts are currently evaluating all three scenarios, based on selected indices and upon the available information from the past.

It is clear that the key problem in this type of study is that the definition of a 'Full Restoration Scenario' is subjective. In any case, it has been possible to establish the risks and the opportunities in each scenario and on that basis to establish the most positive option for Calvia. Through a broad public participation process, embracing all coastal users, the proposals towards a Full Restoration Scenario (or sustainable scenario), constructed by experts, will be discussed, and resulting plans of action devised.

Rimini and Calvia both participate in the LIFE-ENVIRONMENT funding programme, in the project which is entitled MED-COASTS S-T. This project intends:

- To strengthen and implement some major community environmental policies in the tourism sector (ICAM, urban regeneration, public participation, Eco-labelling, Tourism Agenda 21);
- To define long-term strategies for sustainable tourism in Mediterranean coastal areas, which are characterised by mass tourism;
- To launch and implement concrete actions consistent with these European and local strategies.

The project also intends to show how CCA can be integrated into the planning process and the tourism management of tourist districts. This methodology considers all the components of local tourism development:

- The environmental and urban characteristics of areas under scrutiny;
- The quality tourist attractions; relations between micro and macro tourism policies;
- The preferences of the local population, tourists and private stakeholders.

In European countries, the development of tourism remains within the jurisdiction of national and local



planners. This is achieved by implementing effective carrying capacity programmes, planning controls and management. The application of this methodology to tourist destinations will allow the consideration of all aspects of the relation between tourism and the environment in future planning procedures.

To achieve progress toward a strategic plan for tourism and environmental considerations it is necessary to:

- Assess the importance of tourism in terms of its contribution to total income, and income growth.
- Identify the desirable model of tourism development, within an evaluation framework such as the "Limits of Acceptable Change". This approach relates to the Province of Rimini, to Calvia and to Malta, and seems to be the most relevant framework.
- Identify the original elements of the local tourism product, in order to understand potential conflicts with, and interests complementary to environmental protection.

Managing and planning coastal zones requires a continuous and iterative approach. CCA represents a useful and flexible tool that can be used in an iterative way.

Box 13: Controlled development scenario in Rhodes

The study of the Central-Eastern part of the island of **Rhodes** states that “the constraints do not lie in the availability or the existence of space, environmental constraint, and infrastructure”.

Through the CCA process, the study identifies the more appropriate tourism development option of controlled development outlining the qualitative and quantitative determinants for carrying capacity in terms of physical, ecological, economic and social aspects. It concludes by formulating the long-term carrying capacity in terms of accommodation capacities for the area under review.

4.10 Follow-up

The initial objective of CCA is for it to act as a basis for plans, particularly but not exclusively integrated coastal area management plans. In some cases, such as those of Vis, Malta and Calvia, the recommendations and guidelines were adopted in tourism plans. To achieve this, it is essential that local and national authorities accept it and that directions set are followed.

Other cases, such as those of Rhodes, Lalzi Bay and, to a certain extent, Marsa Matrouh, have not been as successful in their implementation. This is generally

due to the continuous pressure for increased construction and development whether for tourism or residential purposes (in the case of Lalzi Bay, the Government of Albania has, after the study was initiated, approved a controversial tourism development close to the coastline). The continuous pressure emanating from lobby groups may also lead to over-meeek CCA results. Another reason could be the lack of commitment to achieving the direction set (as in the case of Rhodes) or a lack of political commitment.

Translating the identified direction into practice is not easy, particularly for areas that are highly urbanized or dependent upon tourism. To ensure that plans, actions and decisions move toward the directions set by CCA, it is important to maintain a continuous monitoring system, which can be used as a gauge for movements towards or away from the chosen development scenario. Malta is in the process of developing such a system which will act as a tool not only for tourism authorities but also for other authorities.

Calvia is considered to be the zone most successful in achieving sustainable tourism development. In this instance, it is evident that public participation is a strong element of local action. Public concern probably acted as a catalyst, prompting decision-makers and local authorities to achieve their success story. This is in contrast to what may happen in instances when the public are not aware of or in favour of sustainable development.

The result of not implementing the CCA recommendations is often a lost opportunity to achieve sustainability and obtain long-term gains. The consequences will be felt for years to come, not just in the short-term, but also in the long run.

Box 14: Limited growth scenario in Malta

In **Malta** the study identifies the limited growth scenario as the way forwards for tourism development in order to attain sustainability. The scenario provides direction as to how the market should be tackled in the next ten years and the implications of this choice, also describing the guiding parameters to assess progress. The study highlights the constraints facing the tourism industry and then establishes the islands’ carrying capacity in terms of bed stock and recommends policies to this effect.

5. **RECOMMENDATIONS FOR SUCCESSFUL TOURISM**
CARRYING CAPACITY ASSESSMENT AND IMPLEMENTATION

The issues discussed in the previous chapter analysing various aspects of tourism carrying capacity assessment, are a testament to the significance of CCA as an efficient planning tool not only for the Mediterranean Region, but also for other areas experiencing similar development problems. These issues can be summarised as follows:

1. The decision-making process for tourism CCA can be undertaken using either a 'bottom-up' or a 'top-down' approach. The 'bottom-up' approach is usually favoured in highly developed areas, especially those facing tourism saturation problems. The 'top-down' approach is more typical in less developed areas, which lack adequate financial and human resources for initiating the preparation of CCA studies.
2. The size of areas for which carrying capacity is assessed, from the geographical point of view, differs from case to case, but generally, the best results may be achieved in medium-sized areas, which are micro-regional or sub-regional in scale, and which have precise administrative boundaries (e.g. districts, small-sized counties, medium-sized islands, small coastal rivieras etc.). When assessing the carrying capacity of smaller areas, the common problem is that of the influence of neighbouring areas, whilst in CCAs for larger areas, there are organizational and financial problems regarding both data processing and the varied niche tourist markets involved.
3. Although the PAP methodology was primarily intended for use with medium-sized and less developed areas, through testing its use in cases such as those of Malta and of Rimini, it proved to be equally applicable in highly developed areas and saturated tourist destinations. Other methodologies, such as sustainable tourism indicators, can be introduced into the PAP framework, if adequate time and funds are available for preparing the CCA.
4. A most interesting aspect arising from the analysis of different test cases was the fact that data management is more dependent upon the organizational and political framework in which CCA is assessed, than upon the quality of data used. Although better results can definitely be achieved if studies are based on more detailed data, strong political pressure may sometimes lead to rather dubious interpretations of the data, and therefore to the proposal of scenarios which are not always sustainable. On the other hand, more substantial

data can lead to sustainable development options in a climate without serious external pressures being brought to bear upon the team conducting the CCA.

5. Sustainable tourism indicators can be used as an effective tool for the analysis of development scenarios, and therefore also for assessing carrying capacity. The main problem with regard to the possible inclusion of sustainable tourism indicators within the PAP framework for CCA, is the necessity for long-term use and monitoring of the relevant indicators in the process, as well as the need for larger financial resources. Using sustainable tourism indicators as an input into data analysis and synthesis, as was the case in the Rimini-based PAP study, can improve CCA.
6. Special attention needs to be given to the public participation process and to public awareness, because this issue plays a very important role in the implementation of the final development option stage of carrying capacity assessment. The crucial problems of CCA, however, as in many other planning processes, are the shortfalls in its implementation, even when the solutions proposed may be considered as sustainable ones. The best way to solve this problem of non-implementation is to involve all stakeholders through the public participation process, whereby they will come to accept the proposed development option(s) as their own.
7. The identification and selection of development scenarios is seen as a crucial step in the CCA process, regardless of the methodology used. It is also important to note that this step is very sensitive to political factors, regardless of the quantity and quality of data being processed. In other words, it is always possible that the decision as to which development scenario should be chosen as "the right one" will be subjective, even if it is based upon very deep data analysis and upon synthesis.
8. Tourism carrying capacity calculation should always be based upon the proposed final sustainable development option, which is usually defined by use of the parameter (or indicator) that represents the lowest value in carrying capacity terms. Since this value is rarely measurable, it is always difficult to express carrying capacity in the form of a 'magic number'. Furthermore, even if the lowest value component is measurable, the final carrying capacity

number is dependent upon many other variables such as those of the tourists' behaviour, the length of the tourist stay, activities undertaken by the local resident population and influences from neighbouring areas, as well as upon changes over time. Therefore the 'magic number' is one that in practice remains under review, and subject to change in the future.

9. The integration of CCA with other forms of planning - such as Integrated Coastal Area Management (ICAM), or the structural plans of a particular administrative unit, is usually dependent upon the circumstances present in each country, with regard to its planning system and its level of development. It is more likely that CCA will be applied if it is made in the form of an input into other planning documents, especially those which are legally binding and subject to effective implementation. A CCA prepared as a free-standing document, may also be applied, especially in areas which are not covered by planning documents, and are in countries which have weak, or even no planning instruments. This type of CCA can easily be used later as an input into the regular planning process.

10. Follow-up to, or the implementation of CCA seems to be the main reason for conducting CCA in the first place. Generally, it is more likely that CCA will be practically applied in those areas that have a strong public participation process and have public awareness of it, and where CCA is also a part of the general planning framework, even if the proposed option(s) cannot be considered as completely sustainable. On the other hand, even ideal development options can end up 'on the shelf', if the key stakeholders are not involved in the preparation of the CCA, and if the areas themselves do not have adequate mechanisms for implementing CCAs.

From the key issues identified in tourism carrying capacity assessment, it is evident that there are many different elements that together make up a good CCA, but the basic concept and methodology of tourism CCA, as developed by PAP, can be used as a general framework for the Mediterranean Region. This approach can also be used in other areas facing similar development problems. The essence of this methodology is explained in the previous chapter. Here we offer those recommendations that specifically relate to process, rather than to the techniques of conducting a tourism CCA. Our recommendations on process, include the need to:

- Involve all the different partners, or stakeholders, who may be affected by, or who may influence the implementation of the outcome of the CCA;

- Go through a process of public consultation about the concept of CCA and its implications through the involvement of the local resident population and through cooperation between the public, the private, and voluntary sectors;
- Ensure that planners, policy-makers and decision-makers come 'on board,' and where necessary, educate them about the CCA concept, and on how their decisions should adjust and change accordingly;
- Evaluate existing sources of data so as not to duplicate efforts and waste resources, and then build upon CCA upon existing information;
- Obtain the right technical expertise in order to determine the various options, to analyse their implications, and to determine carrying capacity with the involvement of local experts;
- Consider environmental, economic, political, social, and physical constraints and evaluate the opportunities of the area in which carrying capacity is being assessed;
- Be flexible and adapt others' experiences that are relevant to the case under review, bearing in mind that what applies in another area, may not automatically apply in your area;
- Identify, admit and accept the specific area's problems, constraints and limitations;
- Follow-up the CCA with the establishment of policies, through monitoring systems and through the provision of development guidelines.

From these recommendations it is evident that the decision to conduct a CCA has to be supported by strong political backing and commitment, so that CCA can become a useful tool for steering change. Even though CCA is based on purely scientific goals, it can represent a solid basis for further analysis or application. Furthermore, the CCA study must be designed as a dynamic tool which describes tourism development over time, so that scenarios built at the beginning of the study can be adapted, adjusted or reinvented if necessary, in future applications of the study.

Another important issue is the fact that CCA methodology is strongly influenced by the political and decision-making contexts within which the CCA study was carried out. In other words, CCA methodology without political backing and formal commitment often fails to get used and applied.

Therefore the definition of development scenarios has to be integrated with a strong participation process, in order to orientate tourism development towards

The definition of sustainable tourism indicators as inputs into CCA is that they have to be made into communications and education tools for the general public, in order to plan policies for sustainable tourism development. Key decision-makers must therefore be involved at the initial stages of a CCA study, in order to ensure that they fully understand all the positive and negative implications of their decisions. Considering the multidisciplinary approach to tourism carrying capacity studies, technical staff must avoid isolating themselves, and conducting a study independently of the opinions of others. That is why public awareness is of great importance, and why the various stakeholders' views must be taken into account. This is not only required at the stage when the social aspects are being assessed, but also at the various other stages of the study, particularly towards the later phase of choosing the most appropriate tourism development scenario. Simultaneously, the staff responsible for preparing a CCA study must be able to rely on political backing, insist upon loyalty to good decisions made, and not sway under pressure from interest groups.

Sustainable tourism development is accepted conceptually as the only possible way of developing successfully, within the limits of the carrying capacity both of the natural and of the socio-cultural environments. CCA is rightly defined as one of the most effective tools that can ensure such development. The authors of this document hope that this Guide to Good Practice in Tourism Carrying Capacity Assessment will therefore help to promote CCA not just as one of the many varied planning tools that exist, but as a potential common mechanism for achieving sustainable tourism development in the Mediterranean region, and also in other parts of the world.