

## Coastal Management in Greece

● Coastal areas: opportunities and challenges

● Policy responses and practices

### Introduction

Greece with a land area of 131.957 sq.km and a coastline which extends to 15.021 km, is the country with the most extensive coastline among all Mediterranean countries. The coastal area is evenly distributed between the continental part and the islands.

Over two thirds of the country is mountainous while 20 percent of the land is divided in more than 130 islands. Approximately 30% of the land is cultivated, 40% is pastures, 22% covered by forests, 2.5% covered by inland waters and 3.5% is built up, the rest being rocky land.

Greece is also the country with the largest number of islands some of which are quite small and dispersed over the Aegean and Ionian seas.

One may recognize three main types of coastal areas on the basis of economic and human activities developed.

- urbanized areas with or without secondary activities
- tourist areas
- areas of rural development or natural areas with no significant human activities.

### Coastal Environment

Three main **types of coasts** can be recognized throughout the whole country: beaches, rocky coasts and coastal wetlands (deltas, lagoons, etc.).

- **beaches and sand-dunes:** A variety of fauna and flora can be found along these areas. Due to their natural characteristics -both abiotic and biotic- they represent the areas where most of human activities are located. Sand dunes in several cases have been destroyed. It is only during the last decade that the value of these ecosystems has been widely recognized. Still no significant measures for their protection have been adopted.
- **rocky coasts:** they represent 70% of Greek coastline. The fauna and especially the flora of these areas is significantly different, but still appears to be of high biodiversity. (Economidou, 1994)
- **wetlands:** Different types of wetlands can be found throughout the whole country. The following table presents the majority of all wetlands, whether they are situated in the coast or not. It should be noted that some of the wetlands can be considered as groups including other smaller wetlands. Based on this the total number of wetlands is estimated to be 408.

Type of wetlands					
Type of Wetland	Number per type	% of total number	Area (str)*	% of total area	Length (km)
Deltas	12	3.2	680,300	33.58	-
Marshes	75	19.8	58,326	2.88	-

<b>Lakes</b>	56	14.8	597,673	29.50	-
<b>Lagoon</b>	60	15.9	287,665	14.20	-
<b>Springs</b>	17	4.5	1331	0.06	-
<b>Artificial</b>	42	11.1	42,646	2.10	-
<b>Lakes</b>	25	6.6	3588,235	17.68	-
<b>Rivers</b>	91	24.1	-	-	4268
<b>TOTAL</b>	378	100	2.026.176	100.0	4268

- \*str=1000 sq.m

The following table illustrates the geographical distribution of wetlands throughout Greece. 118 wetlands can be found in North Greece -East Macedonia, Thraki, West Macedonia- accounting for 31% of all wetlands. 151 wetlands can be found in the remaining continental country, accounting for 40%, while 109 wetlands exist throughout all islands and Crete, accounting for 29% of the total number.

<b>Geographical distribution of wetlands</b>						
<b>TYPE OF WETLAND</b>						
	<b>Deltas</b>		<b>Lagoons</b>		<b>Estuaries</b>	
	<b>Number</b>	<b>Area (str)</b>	<b>Number</b>	<b>Area (str)</b>	<b>Number</b>	<b>Area (str)</b>
<b>EAST MACEDONIA - THRACE</b>	2	230.000	2	40.200	-	-
<b>CENTRAL MACEDONIA</b>	2	62.000	5	22.900	7	30.340
<b>WEST MACEDONIA</b>	-	-	-	-	-	-
THESSALIA	1	26.000	4	685	2	156
<b>EPIRUS</b>	4	247.000	3	2.130	1	400
<b>IONIAN ISLANDS</b>	-	-	10	21.145	4	236
<b>WEST GREECE</b>	1	66.500	9	170.000	5	3.870
<b>STEREA</b>	1	30.300	4	5.615	4	1.160
<b>PELOPONNISOS</b>	1	18.000	6	4.300	3	345
<b>ATTICA</b>	-	-	1	830	-	-
<b>ISLANDS of NORTH AEGEAN</b>	-	-	6	13.350	2	750
<b>ISLANDS of SOUTH AGEAN</b>	-	-	7	2.520	-	-
<b>CRETE</b>	-	-	3	3.990	14	5.389

In the wetlands many rare species of birdlife can be found, such as the White-tailed eagle (*Haliaeetus albicilla*), Spotted eagle (*Aquila clanga*), Dalmatian pelican (*Pelecanus crispus*).

Many species which can be found in the coastal zone are under severe pressure due basically to tourism development. Such species include the Spur-winged plover (*Hoplopterus spinosus*), while three species of sea turtles, the best known being the Loggerhead sea turtle (*Caretta caretta*) nest in different areas. Another rare species is the Mediterranean monk seal (*Monachus monachus*) which is threatened with extinction.

**I**n order to confront the severe problems the Greek Biotope/ Wetland Center was established in Thessaloniki in 1991 as a joint action of the European Commission and the Goulandris Natural History Museum, with the approval and support of the Greek Ministry of Environment, Physical Planning and Public Works and with financial assistance from WWF-Greece.

**G**reece has designated 10 National Parks covering a total area of 350.000 ha (UNEP,1990)

**Coastal forests:** Coastal areas amount to 10.000 ha accounting for 76% of total land area. Some 16% is covered by forests or maquis - a total area of 1.568.000 ha- Coastal forests account for 60% of the Country's forests (H.Marchand, 1988).

**D**uring the last decades successive fires, during summer, have destroyed large areas of forests or forest-like areas. A significant part of these areas is usually coastal areas. Since land regulation for forests and forest areas is not well coordinated and control mechanisms are quite diffused the burnt areas are occasionally converted to pasture land and become eventually built and urbanized. The lack of a systematic inventory of all the areas which are State property and lack of monitoring encourages the whole illegal process. A huge effort has been launched quite recently with the cadastral survey of the country.

**Islands:** Islands consist a particular case of coastal areas calling for a special management practice. With the exception of some large islands -Crete, Evia, Lesbos, Chios- where other activities besides tourism are being developed, all other small islands depend upon tourism for their future development. The main factors of attraction of the islands of Greece is their natural assets: the sun, the beaches and clean seas, the beauty of their built environment: the picturesque villages with a human scale, their architecture well adapted to the landscape, and of course the people : their open attitude and friendliness, the lifestyle.. A possible degradation or loss of such assets is certain to affect tourism itself and consequently the future of social and economic activity on the islands in an irreversible way. Islands, more than other localities (endroits) depend on a delicate balance between environment, economy and society. They are particularly vulnerable to shifts in any of these factors due to their small scale and difficulty of access inducing higher transaction costs . Recovery costs are also much higher and restoration of balance tends to take much longer. To ensure a long lasting tourist activity it is necessary to plan for it in an integrated way in order to maximize its benefits and minimize its risks. (Coccosis, to be published)

**M**anagement of water resources, land development control, preservation of traditional settlements, provision of adequate infrastructure, assurance of a satisfactory level of services are of high priority.

## *Coastal Population*

**I**t is estimated that 57% of the country's population live in coastal areas. Four out of five Prefectures (administrative divisions) are located on the coast, covering a total area of 100.278 sq km, accounting for 76.03% of the total land.

**G**reece with a total population of 10.323.000 (in 1995) is characterized by its high coastal concentration. In particular the population living on a relatively narrow strip of land one or two kilometers wide (in coastal Municipalities) is 3.445.000, representing 33% of the total



population. If one considers the population living in areas with access to the coast (45 minute drive or up to 50 km from the seashore) then the coastal population is estimated to 8.817.000, that is 85% of the total. The remainder 15% of the total population live in the interior of the country (CEU, 1995).

**C**oastal density is 88 -inhabitants per sq km- while the average density for the country is 75, which indicates that the interior density is considerably lower.

**P**rospects suggest a modest population increase but geographic patterns vary widely from place to place. Coastal areas and tourist resorts are likely to experience significant population increases in parallel with wide fluctuations in numbers of residents from season to season.

**A**ccording to the Blue Plan Scenarios for Greece coastal population is expected to increase in the mid- and long term (2025) although from a demographic point of view two Scenarios foresee a slight decrease of population in the long term (University of the Aegean, 1993).

**I**t is estimated that 62% of the total population live in urban areas while in 2025 urban population is expected to represent 79% of total (Lanquar, 1995). Urbanization has been strongly associated with urban concentration. Most of the large urban centers are located on the coast. The following table presents the first fifteen cities ranked according to their population size. Two out of three are located on the coast. Most of these cities are important harbors as well, with the exception of the city of Rhodes which is also an important tourist resort in Greece and the Mediterranean.

CITIES	POPULATION (1991)
ATHENS*	3.096.775
THESSALONIKI*	377.951
PATRA*	155.180
IRAKLION*	117.167
LARISA	113.426
VOLOS*	77.907
IOANNINA	56.907
HALKIDA*	51.482
SERRES	50.875
HANIA*	50.077
TRIKALA	48.810
KATERINI	46.304
LAMIA	43.898
KALAMATA*	43.838
RHODES*	43.619

**T**he total urbanized coastal area is estimated around 1315 sq.km, that is 1.31% of the total land. This demonstrates a high utilization of land considering the geomorphology of the country. Prospects about coastal urbanization indicate a further increase in the mid and the long term (year 2025). The share of urban coastal population is expected to rise from 59.37% in 1985 up to 86.47% according to the worst scenario. Urbanization in coastal areas is not expected to be lower than 67.84% by the year 2000 (University of the Aegean, 1993).

**I**n spite of an increase of both coastal population in general and of coastal urban population in particular, density will still remain low when compared to other Mediterranean countries.

**C**ompared with the rest of Europe, Greece will continue to demonstrate lower urbanization rates, although in the distant future the differences are expected to become less important.

**B**esides these high urban concentrations on the coast, the last few decades suggest also a strong tendency towards littorization, meaning urban development sprawling along the coast. Not necessarily in high densities. This process is encouraged by tourism development or an expanding construction of second homes. This suggests that in the long term urbanization of the coast will continue with increasing densities as such areas are likely to be converted to prime residential areas, particularly those near the large urban centers. This is an anticipated outcome from the growing tendency of people to seek residences in "environmental amenity areas" and the coasts have a lot to offer in this context. As a result demands for adequate infrastructure in these areas will become more acute in the near future triggering further concentration of activities and people, boosting urban development along the coast.

## *Economic Activities*

- Primary sector
- Secondary sector
- Tourism

### *Primary Sector*

#### **Agriculture**

**C**oastal land is considered to be of high productivity, rich in water resources. Coastal agricultural land covers 35% of the total coastal land, including some areas of high potential productivity. Even though the coastal environment is suitable for all kinds of cultivation due to its generally milder climate, the future of coastal agriculture is challenged. Conflicts over land use arise commonly between agriculture and tourism development. The lack of efficient agricultural land regulation context in association with the large economic benefits arising from people's participation in tourism development, have encouraged the abandonment of agricultural land and its gradual transformation.

**A**gricultural areas located in the vicinity of large urban centers, appear to follow a gradual transformation process, where agricultural activities are replaced by activities of the secondary sector or the tertiary or become areas for second homes. This process is more acute in coastal areas.

**B**esides conflicts over land uses another cause for an expected future decline of this activity could be the implementation of Community Agricultural Policy and the realization of the Single European Market. In the long term it is possible that restructuring and modernization efforts could have a positive impact particularly in these areas which have large plains like Crete, South Peloponnisos, Thessalia and East Macedonia. However, in most cases unless particular measures are taken marginal agricultural activities will be replaced, causing an irreversible transformation of the environment, not always desirable. This is probably the most important problem for the smaller islands.

#### **Cattle-breeding**

**C**oastal areas include areas where the biomass is considerably high encouraging therefore the development of this activity, although in Greece most of breeding is mountain related (goat and sheep raising).

## Fishing/Aquaculture

**C**oastal fishing is an important activity. About 40,000 people are occupied in this sector, using about 6,000 fishing boats. However, coastal fishing cannot cover the total demand but only a small part of it. So, besides fishing, another activity which has been growing in the last decade is aquaculture. There are several aquaculture installations all around Greece in islands like Limnos, Lesvos, Crete, Leros, Cephalonia, Ithaki etc. but also along the mainland coasts such as East Macedonia, Peloponnisos, Thrace, etc.

**I**n general the areas suitable for aquaculture are lagoons, river deltas and estuaries, which are from an environmental conservation perspective areas of interest. Their siting is subject to a an administrative review procedure. However, in some cases there are strong conflicts of priorities in addition to occasional conflicts with local fishermen.

## Salt pans and salt production

**S**alt production has been an important coastal lagoon activity in the past but gradually most sites have been abandoned due to negative economies of scale associated with small scale production. There are several salt pans throughout the country: Attica, Lesvos, Lefkada, Messolonghi, Zakynthos, Crete, Halkidiki, Pieria, Corfu, Milos, Thessaloniki, Xanthi, Samos, Halkida, Rodopi, etc. As salt production is strongly seasonal in character (summer) salt pans are widely used by migratory birds for wintering or intermediate stops. Recent experiences suggest a strong compatibility of salt production and environmental conservation (i.e. Messolonghi).

## Secondary Sector

### Mining and Industry

**M**ore than 80% of all industrial activities are located on the coast. Usually the industries that prefer coastal locations are only the ones which need water as part of their production process, or need water access for transportation purposes. In Greece though there has been a strong industrial concentration in coastal areas due to the coastal location of many major urban centers, the traditional role of shipping in transport of industrial products (i.e. mining raw materials, cement, etc.) but also due to the location pattern of the major road transport axis from Patras to Kavala, in the vicinity of the Greek coastline for geomorphological reasons.



**M**ining locations are commonly near the coast causing serious conflicts in some areas with other activities, mostly tourism. Industrial locations have been in the past also a cause for environmental or land use conflicts in coastal sites mainly relating to the processing of raw materials (i.e. alumina plant, oil refining or gold smelting).

**I**ndustrial locations are strongly dependent on road transport and large urban centers and quite dispersed over the landscape. In the future, international competition in conjunction with other factors -human capital, infrastructure, services required, investments in other sectors, etc. are likely to favour

- Δελτία ανακοίνωσης
- ατμοσφαιρική ρυπανση
- σχεδιαζοντας για όλους
- Φιλόχωνος Παιδαγωγικό
- Δίκτυο Έρευνας Διαχείρισης Περιβάλλοντος
- Διακηρύξεις Διαγωνισμών
- Εκπαπτική ρύθμιση από βιομηχανία

locations near agricultural production areas or large urban centers. Large and medium-size cities mainly situated in northern Greece seem to be such places. Few coastal sites are favoured for such developments.

## Shipping and Navigation

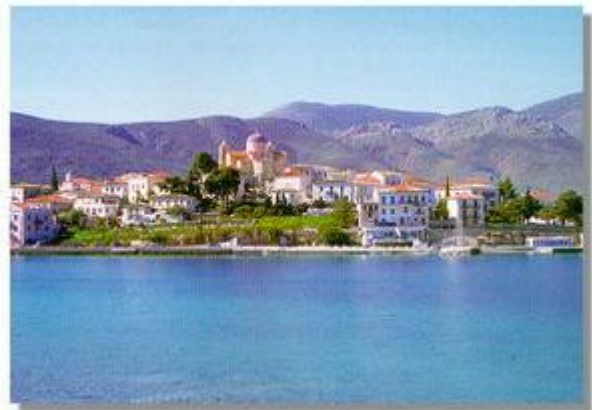
**H**arbors exist throughout the whole country, Piraeus and Thessaloniki being the most important among them. Each island has its own small harbor. Environmental conflicts can be caused from accidents threatening with severe pollution problems.

## Tourism

**T**he natural -and cultural- assets of coastal areas attract every year a large number of tourists.

**G**reece received 11.649.945 tourists in 1993, while the over-night stays were 49.592.246, out of which 37.186.100 were international tourists. The islands have a large share of international tourism.

**T**ourist activities cover an important part of Greek coastal areas. In particular 90% of all tourist activities and recreation as well are located on the coast. This concentration is justified by the type of tourism developed in Greece, mass tourism related to sun, sea, sand, although usually linked to visits to cultural sites. A very small proportion of tourist installations can be found in other places. In the last few years the efforts of both policy makers and investors are oriented towards a broadening of tourist product and in the amelioration of services provided. Eventhough, these efforts do not suggest in any case a radical change of the tourist product itself. A large part of future activities related with tourism are expected to be located along the coast.



**T**ourist Density -tourists per sq. km.- along the coast is 13, while the corresponding average density for all Mediterranean coastal areas is 15.6 while Tourist Occupation -tourists per meter length of coastline- as a measure of tourist development along the coast is 0,1 while the corresponding average occupation for the Mediterranean is 0,41 suggesting that in spite of its tourist development Greece does not face serious problems of crowding or dense tourist development. The index of social pressure - ratio of tourists/ local population- is 0,14, equal to the corresponding average (Lanquar, 1995).

**I**nternational tourism is only a part of the tourist related problems many coastal areas face. Domestic tourism often poses significant additional threats, estimated on the average to similar levels with international tourism although experiences vary widely from place to place. Domestic tourism contributes also to the urbanization of coastal areas as a result of the demand for second homes or apartments for rent/lease.

**T**he areas that draw great profits from the rapid development of tourism were basically areas with a great coastal or island parts like Crete, Rhodes, Cos, Cyclades, Corfu, Halkidiki, Argolida, etc. There is still a strong potential for further tourist development in these and other areas which is gradually realized as new public investments allow for better access (i.e. roads, airports, marinas, etc.) or better services (i.e. waste water treatment, telecommunications etc.).

**P**rospects indicate that tourism development could increase further even in the most pessimistic scenarios in spite of some possible short run fluctuations.

**B**esides economic profits, tourism development has contributed though to a gradual deterioration of environmental quality through urbanization along the coast and a deterioration of the built environment particularly in traditional settlements. Although Greece is not characterized by large scale tourist installations, to an extent that other Mediterranean destinations have been developed, in several cases the impacts of tourism associated urban development and sprawl have altered the scale and architectural character of traditional settlements, in spite of building and aesthetic control regulations. Such is often the case with the small human settlements in some islands which have been popular tourist resorts.

**T**ourism related problems are not restricted to the control of urban development but also to functional problems for human settlements. Congestion of services and beach sites, drinking water delivery, liquid and solid waste disposal, noise and traffic congestion, etc., can be cited as typical problems of several tourist areas, often surpassing the organizational and financial capacity of local communities to deal with such issues.

**T**o a great extent such problems are caused by the strong seasonality of tourism in Greece. During summer population concentration is high, often exceeding the carrying capacity of both the natural ecosystem, the organizational structures -infrastructure, services-, causing severe impacts not necessarily reversible. This over-concentration calls for investments for the provision of required infrastructure which ameliorates the situation further enhancing the attraction of tourist destinations, often leading to another cycle of new investments, urbanization, congestion, degradation and so on.

**I**slands, particularly the smaller ones, but also many coastal resort sites face often serious problems of seasonal overloading and abandonment, rendering the management of tourism difficult from many points of view.

## *Environmental Impacts*

**A**lthough some of the most important environment/development issues have been already presented in previous sections a brief presentation of environmental component related problems are recapitulated in the paragraphs to follow.

### **Water**

**W**ater degradation is a problem in some coastal places particularly where associated with limited water resources as in many islands. Although extensive data on the condition of groundwater resources are lacking there is evidence of ground water contamination due to uncontrolled liquid waste disposal and problems of salinization due to over pumping.

**I**n some wetlands and river deltas pollution problems can be evident due basically to intensive agricultural development, associated with a non rational consumption of pesticides and fertilizers. This often results to increased concentration levels of chemical compounds, organic pollution and/or eutrophication problems.

### **Sea**

**S**ea pollution is basically localized. Pollution levels are quite high in some places which are in the vicinity of large urban centers or industrial sites. The urbanization of the coast in relation with the lack of adequate infrastructure -sewage system- have contributed in some places to a deterioration of the quality of the marine environment. Luckily the situation in most cases is not considered as irreversible.

In particular 27 coastal cities - with a population exceeding 10,000-with a total population of 4.568.000 will construct in the near future treatment plants with a total cost of 369.780 \$ (UNEP,1995). Therefore sea pollution levels may drop.

## Land

**P**robably the most severe environmental impacts are related with the permanent alteration of land uses and its effect on rural ecosystems. Urbanization of the coast has provoked radical changes to the natural environment in many ways. The sprawling and continuous urban development along the coast has caused losses of agricultural land and open spaces which could also serve as habitat areas and sites for recreation. This is quite often the case in tourist areas, where the rates of the loss of agricultural land are quite high.

## Habitats

**I**ntensive agriculture, illegal breeding in forest areas, tourism development, uncontrolled building, public works, etc. are often causes for the deterioration of coastal ecosystems. Sand dunes have been particularly affected.

## Coastal erosion

**T**his seems to be particularly acute in some sites where various forms of public or private works (small jetties, landfills, etc.) have been directly located on the coastline without detailed studies or in cases where such works have had indirect effects interfering with soil/sand deposition patterns (i.e. coastal roads).

## Landscape

**D**eterioration of land aesthetics is associated with urban development but also with mining and quarrying facilities.

**A**lthough Greece has in comparison to other European countries its coasts in a relatively good natural state, the rapid developments of the last few decades bring alarming evidence of environmental degradation. The irreversible effects in some locations call for a revision of practices and policies towards the basic principles of sustainability.

## *Policy Responses and Practices*

- Coastal policy
- Regulation of coastal urban development
- Coastal management tools
- Authorities responsible for coastal management
- The role of local authorities
- The role of NGOs and the private sector in coastal Management
- Assessment of environmental impacts

- [Implementation of coastal policy](#)
- [Examples of successful environmental coastal management](#)
- [National program for the sustainable development of coastal areas and islands](#)

## Coastal Policy

**T**here is no specific policy legislation for coastal area management. However, elements of it can be found in general spatial or sectoral policies concerning urban development, tourism, industry and agricultural development and in the general context and limitations provided by the Environmental Law -1650/86.

**I**n particular the policy concerning the creation of new settlements or the expansion of existing ones (Law 1337/83) provides for the following:

- Absorption of future demand by existing settlements
- Avoidance of the expansion of existing settlements and in particular of the expansion along the coast.
- Definition of the boundaries of the areas which could be built up. Encourage expansion in the areas where density permits so, and in any case encourage central -around a junction- and no linear development.
- Protection of beaches and natural coastal areas, assure public access.

**I**n spite of its wide application in the last decade, it should be noted that no efficient mechanisms for implementation have been developed. As a result these broad policy guidelines are not operational or explicitly specified as rules and often are subject to various interpretations and do not have a binding character. Experience so far, indicates that institutional regulation does not always serve as an effective tool for guiding socioeconomic development, instead it is used as a way to respond to the already shaped conditions or to satisfy local demands. Having this in mind it is doubtful whether some additional regulations will make possible the inversion of the situation.

**C**oncerning the policy about tourism development the main policy guidelines suggest:

- Amelioration of quality and enrichment of tourist services in general encouraging new tourist products
- Elongation of tourist season
- Discouraging mass tourism
- Preservation of both natural and human environment, since they consist tourist assets.

**E**mphasis is drawn on discouraging illegal accommodation and the prohibition of building facilities in saturated areas. Effectively the real control is through the definition of an upper limit of required land area for all plots used for the construction of tourist accommodation. In general the development of accommodation in large plots is encouraged and if possible with traditional materials.

**C**oncerning the preservation of agricultural land and related activity, particularly in coastal areas, where pressure for tourism and urban development in general is high, a particular provision -Law 1337/83- does not allow the expansions of settlements if they are not with accordance with environmental protection and with the broader development goals, within which the preservation of agricultural land of high productivity is included. Some more provisions exist as well. However, there is a general lack of relating such physical planning regulation with socio-economic development programs and projects, so there is often an absence of a framework for setting such priorities which the law presupposes as existing.

**T**wo types of agricultural land have been designated as areas of high priority for protection: agricultural land which is irrigated or can be irrigated in the future and land where traditional agricultural activities are undertaken. Although the need for protection of these areas has been widely recognized no institutional arrangements make the above policy suggestions obligatory. Furthermore there is no designation of such areas from the Ministry of Agriculture which causes significant problems with interpreting and implementing the provisions of the law.

**O**ne may refer to other several sectoral or other policies related with activities located on the coast. As a general comment, it is evident that all these policies, besides their own deficiencies do not consist in any case an integrated coastal management policy, that is a policy developed specifically for the management of coastal resources, defining:

- Identification of coastal area(s)
- Goals of coastal management
- Procedures for the preparation of management plans
- Policy instruments which are suitable to be used
- Authorities responsible for coastal management
- Financial provisions of coastal management
- Implementation mechanisms
- Monitoring

**M**ost of these sectoral or other isolated policies are mainly related to building regulations or land development control, through which coastal policy is exerted. It is clear that the current institutional context is inadequate to deal with the complex problems of the coastal areas.

## *Regulation of Coastal Urban Development*

**T**he basic law for land-use regulation is the Land Development Law 1337 of 1982 which applies to urban areas and small towns. Land development in rural areas is practically unconstrained and is regulated by a Presidential Decree for building in areas outside official town plans.

**L**and use control in settlements of over 2000 population requires a General Master Plan. For smaller settlements, land use control requires "development boundary plans" in practice generously expanded to accommodate holiday homes. For areas outside existing General Master Plans and village boundary plans, the law provides power for the designation of Development Control Zones (ZOE). Master Plans and Development Control Zones are subject to elaborate preparation and review procedures.

**B**esides these there are some other specific control instruments concerning:

- **Tourist control zones** (saturated and development control for tourist areas). This regulation is in addition to Master Plan approval and applies to a limited number of areas and only for tourist installations. These areas are identified at the central administration level.
- **Building regulations** for all areas outside approved general master plans. This is a controversial piece of legislation dating from the 1920's which is basically responsible for urban sprawl in rural areas but which has also wide political (and electoral) support. It gives the right to build on a large enough piece of land outside urban areas.

### **Main characteristics from the implementation include:**

1. Land use plans for the areas outside urban centers cover only 2% of the total land
2. The regulation context for all these areas, outside existing plans, has several negative impacts since it allows for:

- high Floor Area Ratios for certain economic activities, like tourism and industry, often exceeding corresponding coefficients for the areas which being in existing plans
  - Small size lots
  - the development of certain activities -tourism- without assuring the preservation of agricultural land of high productivity or wetlands, etc.
3. Illegal partition of plots which exist out of existing plans.
  4. Illegal building activity
  5. One should also note:
    - the lack of appropriate mechanisms for the implementation of land policy
    - the lack of land cadastre
    - the lack of a system for codification and classification of land uses
    - the lack of spatial plans and development programs and in particular the lack of integration among them

## Coastal Management Tools

**T**here are no effective tools for coastal management. Most of applied policies and their corresponding tools aim at land development control, building regulation or at encouraging certain economic activities. They do not differentiate though between coastal areas and other areas and there is no institutional mechanism to ensure coordination between economic development policies and physical planning. Therefore, so far there are no successful examples of coastal area planning. To some extent this is also due to a strong centralization of decision making, lack of experience and organizational structures at the local level and insufficient horizontal(multi sectoral) and vertical (national/regional/local) coordination of policies.



**T**he above do not suggest though that there are no efforts to ameliorate the situation. In 1980-82 a short lived National Coastal Management Programme was initiated, mainly at the central administrative level. In the 1983 Reports for the Structural Plans for each Prefecture special attention is drawn to the problems of coastal areas. In the Report for the National Physical Plan presented in the early eighties a special chapter was devoted to the problems of the coastal zone. Ever since several attempts have been made to adopt parts of a coastal management policy, either in the form of minimum setback regulations from the coastline (30 m. for Greece) or in more recent Physical Planning Studies under ENVIREG for a number of coastal areas and islands, currently still under elaboration.

**E**fforts to adapt sectoral policies to environmental issues have also attempted to bridge the gap between socio-economic programming and physical planning.

**S**ince the main activity that is developed along the coast is tourism special efforts have been addressed towards the development of the economic activity itself.

**O**ne of the new tools recently introduced but not yet implemented is the creation of P.O.T.A -Areas of Integrated Tourism Development-. As POTA are recognized:

- areas with significant tourism infrastructure where demand is quite important
- areas where tourism infrastructure is important, while natural environment is rather fragile and the demand is still high
- reas with important infrastructure and low demand.

**T**he creation of these areas aims on the one hand at the control of tourism development and on the other hand at the amelioration of tourism services, since in these areas it would be possible to provide adequate infrastructure and assure the provision of high quality services.

**I**t should be noted though that this system defines tourist capacities and limits based not upon the study of the carrying capacity of the natural system, but only on socioeconomic criteria. That is through POTA areas of different levels of tourism development are defined without reference to possible local natural particularities. Another comment to be made in this respect is that the goal of amelioration of quality is strictly related to the construction of hotels of a certain type -A, A" class- and not to a broader perspective of social and environmental goals.



**E.X.M -Special Spatial Studies-** represent the only type of spatial planning which is being carried on a very systematic way. These studies have been financed by European Union funds -IMP, ENVIREG-.. The study area is very limited and it basically includes coastal areas and small islands, which represent areas where pressure from tourism development is severe. The ultimate goal is the definition of land uses and building conditions for all the areas which do not belong in existing plans.

**T**he major tool which to achieve such control is Z.O.E -Zones for Development Control- which is used for building and land use control. This relates to provisions for anticipating future development through land development regulation, mostly relating to physical planning issues. Although Z.O.E. is the most widely used tool in planning its scope for integrated coastal area management is limited as its breadth is restricted to development regulation

**I**n any case the EXM studies can not be considered sufficient for coastal management as they lack the broader framework of plans at a regional scale, which would provide broad guidelines about the role and the spatial distribution of activities. In addition they cannot provide for satisfactory integration of environmental management issues in coastal area management.

**T**he area covered by the E.X.M is estimated at 10-12% of total land area, while the area where interventions are suggested represents 8%. Finally the areas for which Zones for building control is expected to be instituted does not exceed 4%. If one considers the amount of ZOE that have been approved so far then the percentage becomes insignificant. The main problem confronted in the implementation process is the restrictive nature of building conditions suggested by these plans for all areas which are located outside of the planned areas. This is against the common practice and feeling of building up to the maximum potential from an owner's perspective. Enormous social pressure explains partly why very few of the ZOE suggested by the E.X.M succeed in reaching the final stage of adoption.

**T**he Environmental Law 1650/86 can be used as a tool for spatial planning for areas which present certain special environmental characteristics. The law provides for the designation and delineation of areas of protection and conservation -national parks, marine parks, aesthetic landscapes, areas of significant ecological value- or areas for the development of productive activities. The law allows restrictions to be applied for the development of activities within both the zone of protection and its surrounding zone in order to effectuate land use control.

**T**he Law also provides the planner with some economic tools -exchange of land areas, compensation, allowances, transfer of floor area ratio, compulsory expropriation. It is also possible to prohibit or postpone any building activity during the stage of area designation as protected -fully or partially-. These mechanisms provided through the Environmental Law are important but the main

problem is that most of these are still ineffective since the corresponding Presidential Decrees have not been signed.

**A**nother tool which is being used is the administrative mechanism for Spatial Allocation of isolated tourist or industrial installations. It is essentially a review process which gives in principle acceptance to a proposed project before the stage it seeks approval for special assistance under the various assistance laws (i.e. incentives laws).

**F**or individual projects an Environmental Impact Assessment is required, based on a joint ministerial decision in conformity to European Union directives, but such procedure does not differentiate coastal area projects from other types of projects on the basis of the particularity of the air/water/land interaction in the coastal zone providing for special considerations.

## *Authorities Responsible for Coastal Management*

**T**he Ministry of Environment Physical Planning and Public Works and in particular the General Directorate for the Environment and Spatial Planning is mainly responsible for the development of an integrated approach to the planning and management of land resources. The basic legislation related to issues of planning and management of land resources -360/76 Regional Spatial Planning and L. 1650/86 Environmental Protection- is currently under review to be amended.

**R**ecently the judiciary sector, in particular the State Council, which is the highest administrative law Court, has taken initiatives towards the establishment of links between environmental protection and spatial planning.

**A**lthough from a legislative point of view the potential exists to pursue coastal management, administrative structures are not always up to such a task. Besides the Ministry of Environment Physical Planning and Public Works, other authorities which influence directly or indirectly the formulation of coastal policy are the Ministries of National Economy, Defense, Interior, Finance, Health, Agriculture, Development (Industry, Tourism) and the Ministry of Merchant Marine. There is no provision for a mechanism at the government level which could pursue coordination and arbitration causing severe problems (Spanou, 1994).

**R**esponsibilities of coastal planning are spread among national, regional and local level, causing severe problems of gaps and overlaps of authority accounting for the inefficiency of the administrative system to respond to problems. The planning system is not flexible, often oriented towards the remedy of past problems, unable to foresee future needs and problems.

**T**he fragmentation of responsibilities between central authorities has resulted in inconsistencies between physical plans, prepared by the Ministry of Environment, Planning and Public Works and economic or other sectoral and regional development plans, prepared by the Ministry of National Economy or other sectoral Ministries.

**T**he institutional context, along with an insufficiency regulatory system, can not control the fast urbanization process and in several cases fails in the preservation of both the natural and built environment or the preservation of traditional activities like agriculture.

**C**oordination among different sectors along with the "decentralization" of information, implementation, monitoring and control system are yet to be fully established.

**P**roblems due to overlapping, competition, limited authorities, gaps in horizontal and vertical communication between authorities are yet to be overcome.

**A**ccording to a recent report prepared by the Ministry of National Economy there are about 50 institutions currently occupied with environmental issues.

**T**he Law on the protection of the environment provides for the establishment of a National Committee for the Environment -EFOP-. Its institution faces opposition.

**W**ithin several regions Departments of Environment have been setup, aiming at the collection of information concerning environmental quality and the preparation of proposals for the adoption of corresponding measures. Still there is no particular public participation in the decision making process over environmental issues. Environmental Offices have also been established in each Prefecture being mainly responsible for the approval of the "Environmental Impact Assessment" Studies .

**I**n conclusion there is still a lot to be done in order to reach a satisfactory level of interagency and intersectoral coordination at all levels, an essential component of rational coastal management.

## *The Role of Local Authorities*

**L**ocal authorities are participating in the Organizations of Planning and Environmental Protection in Athens and Thessaloniki and is foreseen to participate in the National Institution of Environment when it will be formulated. They can express their opinion about regional development plans over environmental issues.

**A**s already noted besides the responsibilities about sewage, waste, traffic, gardening, no other responsibilities were given to Local Authorities till very recently. The Environment Law recognizes the necessity for a more active participation of local authorities. Eventhough the implementation of environmental policy is still the responsibility of central or regional authorities. (Spanou, 1994)

## *The role of NGOs and the Private Sector in Coastal Management*

**N**on Government Organizations play in several cases a positive role. During the last decade the number and the negotiation power of NGOs has increased. Usually their role is local issue oriented. So, there are several organizations occupied with some acute local environmental problems. There is also the case of NGOs that have devoted a lot of their efforts for the prevention of large scale projects (i.e. Aheloos river diversion) or the preservation of species (i.e. the monk seals or loggerhead turtles). Although their role and their participation in the decision making and planning process is still very limited, future prospects could be more promising under the condition that institutional modifications in relation with changes in peoples attitudes will take place.

**T**he private sector has no authority in coastal management. It should be noted there are no effective mechanisms which could assure provision of information, facilitate communication and furthermore encourage sensitization of the private sector -mainly land owners- over coastal issues.

**I**n addition there are no appropriate mechanisms to encourage cooperation between public and private sector which could further contribute in a more rational coastal development.

**E**xisting institutional context provides only for the establishment of either "pure" or joint ventures of local -public and private enterprises, while it does not provide with the opportunity to establish a particular management agency which could assure the participation of both public administration, local authorities, business, local professionals and other local organizations.

## *Assessment of Environmental Impacts*

**G**reece as all European Countries has adopted the corresponding regulation context about the assessment of environmental impacts of large projects. Therefore all projects which belong in the first category have to submit, in order to obtain the permission, an environmental impact statement. Hotels, over a certain capacity belong to this category.

**T**here is no environmental impact assessment of policies or national/regional plans.

## *Implementation of Coastal Policy*

**P**olicies and plans are not effectively implemented although usually approved at the national and regional level.

**A** great part of regulation has either never being implemented or have become inactive after a short period of implementation (i.e. law 360/76, penalties for illegal constructions and land partition). Still, constant violation is a common practice even when a law is implemented. (Giannakourou G., 1994)



**T**his is usually the case for all plans which aim at land development control and furthermore at the definition of desirable/appropriate land uses. There is a strong resistance from local people, owners of the land, who deny any control over land. Local policy and decision makers often submit to these pressures. The problem becomes more acute in all coastal areas, where prospects for tourism development are high. Any kind of restriction for building up an area will confront local interests. Since there is no proper implementation mechanism or monitoring, it is often the case that people built in areas where they supposed not to do, or they occupy more land than the one they allowed to. Bureaucracy further contributes to ineffective implementation and monitoring.

### **Programs related with the protection of coastal areas**

**S**everal initiatives have been undertaken usually with the assistance of the European Union and its corresponding funding mechanisms.

**I**n particular assistance has been provided through the following:

1. The Union's structural funds. Within this context the following activities/programs were undertaken:

**Envireg Program**, co-financed by the Greek government. Its principal targets exclusively related with coastal issues were reduction of coastal pollution (73% of the budget) and protection of coastal biotopes (11%)

**The National Greek Program for the Environment** The main actions were biotope protection, control of water quality, air pollution, etc. These actions covered a wide range of environmental actions not necessarily for coastal areas only.

**Regional Programs:**Mainly to assure the development of environmental infrastructure.

2. The Cohesion Fund
3. ACE/MEDSPA/LIFE: Mainly for water management, protection of endangered species, awareness-raising campaigns, etc.

### Projects currently being funded under Life-Nature for coastal areas

- Management plan for the lagoon of Tsoukalio, Avleri, Rodia and Logarou in the Amvrakikos bay, W. Greece.
- Messolongi wetland management programme
- Establishment and first phase of operation of the Greek Biotope/Wetland Center
- Conservation programme for the Ionian sea region concerning habitats of species threatened with extinction
- Greek national programme for the protection of monk seals

**G**reece fully participates in all activities of the Barcelona Convention and the Mediterranean Action Plan. Recently the new amended Land Based Sources protocol was adopted by the contracting parties. This legal document in conjunction with MAP phase II is expected to play an important role in coastal management on a national and regional level. MAP phase II and its related activities are much more action oriented than MAP phase I which focused on assessment. Furthermore the area coverage of the LBS protocol has been extended to the hydrological basin of the Mediterranean encompassing the coastal zone. The application of these instruments is expected to play an important role in the sustainable development of coastal areas.

## *Examples of Successful Environmental Coastal Management*

- [The Evros river delta](#)
- [The case of Rhodes: Integrated planning study](#)
- [National marine park of Alonnisos Northern Sporades](#)

### *The Evros River Delta*

**T**he Evros Delta in the East of Greece is a unique wetland. In 1975 it was designated by the Greek authorities under the Ramsar Convention. This made possible to prevent or just slow down some of the drainage and agricultural improvement work that has started back from the 50s. Due to all this previous work soil had lost its fertility, while salinization of the water had appeared. Some remedial work was undertaken in the 80s, while at last in 1987 the site was designated a Special Protection Area under the Directive on the conservation of wild birds. (Commission, 1995)

### *The Case of Rhodes: Integrated Planning Study*

**T**he Mediterranean Action Plan (MAP) has been implementing in the Mediterranean region a number of area-specific projects, basically in areas which confront considerable environmental problems, entitled Coastal Management Programs (CAMP). The Integrated Planning Study for the island of Rhodes, being prepared within the CAMP "The island of Rhodes" has the nature of an "umbrella" document which integrates the results of other activities performed within this project (GIS, EIA, CCA,

<http://www.minenv.gr/1/11/113/11303/e1130301.html>

water resources management plan, solid and liquid wastes management plan, study on impacts of climatic changes, etc.)

**T**he study is considered to be the first and major step towards the launching of the process of integrated coastal and marine areas management of the island of Rhodes.

**T**he scope of the study was the:

- Identification of development and environmental issues,
- Definition of the most feasible future development of the island on the basis of the assessment of the capacity of the natural resources
- Development of proposals about spatial strategies of the development along with appropriate management actions.

**T**here is no implementation of the program.

## *National Marine Park of Alonnisos Northern Sporades*

**T**he National Marine Park of Alonnisos in Northern Sporades is the first marine Park officially and legally established in Greece. The Park is a refuge for many types of fish -300 species, waterfowl -up to 80 species, many of which are migratory, reptiles, mammals, and in particular sea mammals. Among all the most interesting are the Mediterranean monk seal (*Monachus monachus*), the red coral (*Corralium rubrum*), Eleonora's falcon (*Falco eleonora*), Audouin's gull (*Larus audouinii*), the shag (*Phalacrocorax aristotelis*), the wild goat of Gioura (*Capra hircus aegagrus*), which are all considered to be endangered species.

**T**he attempts to establish the marine park started back in the early '70s, but it was only in May 1992 that the area was declared to be a National Marine Park by Presidential Decree 519/D (16/5/92).

**B**esides the Greek Government, special reference should be made to all other non-government institutions such as the European Parliament and the Dutch MEP which contributed in both the establishment and furthermore in the protection of the monk seal.

**T**he establishment of the National Park aims to ensure:

- The protection, preservation and management of the flora, fauna and landscape of the broader area of North Sporades
- The conservation of the monk seal
- The conservation of other rare species
- The sustainable development of the entire area

**T**he Park covers a total area of 2200 sq. km and is divided into two areas which include seven islands and 22 rocky islands and reefs. Besides the very positive initiatives taken so far there are still a lot to be done to ensure the long term sustainable development. The most important is the definition of the authority responsible for the management of the National Marine Park.

**I**t should be noted that during the past years several programs were carried out, several of which were financed by the European Union.

## *National Program for the Sustainable Development of Coastal Areas and Islands*

**T**o overcome the chronic problems of coastal areas and islands, the Ministry of the Environment, Physical Planning and Public Works has initiated a process towards a more effective coastal management. The new initiative provides for a high level National Committee for the Management of Coastal Areas and Islands, assisted by a Secretariat and several Task Forces at the Ministry level with the participation of experts from research and academic institutions.

**T**he initiative foresees the elaboration of a strategy for the sustainable development of coastal areas and islands and the development of an Action Program for Coastal Areas and Islands.

**T**he preparation of coastal policy will include:

- Definition of general and specific goals and objectives for sustainable development of coastal areas and islands.
- Delineation of the coastline and a critical zone along the national coasts to be designated as national heritage to be preserved as an area of protection for natural ecosystems and public open space.
- Identification of a broader zone for coastal management to be delineated for all coastal areas.
- In areas which face problems of pressure for development the purpose of management will be to specify the rules for the development of human activities ensuring the preservation of natural resources and ecosystems.
- In areas which face environmental degradation because of intensive development the purpose of management will be environmental upgrading enhancing natural resources, protecting the function of ecosystems and upgrading human activities.
- In areas relatively unharmed by human activities the purpose of management will be to ensure their protection as national reserves.
- For every type of coastal area desirable and permitted uses will be defined and adequate public access to the coast will be provided for.
- Preparation of a particular approval process for all significant projects to be located on the coast. This could be achieved by refining existing tools (EIA).

