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in

Camarda D. (ed.), Grassini L. (ed.).
Coastal zone management in the Mediterranean region

Bari : CIHEAM
Options Méditerranéennes : Série A. Séminaires Méditerranéens; n. 53

2002
pages 247-262

COASTAL DEVELOPMENT vs. COASTAL MANAGEMENT

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ABSTRACT

This study aims at underlining the socioeconomic opportunities as well as environmental and/orecological limitations of the coastal zones within the Mediterranean Region. It is obvious that both for socioeconomic and environmental studies reliable quantitative and qualitative data in usable format are necessary. In almost every study especially in the case of developing countries data acquisition appears to be the most important step, which may seriously hinder further efforts.

On the other hand, reliability of a study is closely related to the availability of required data in various user-friendly formats. Acquiring and sharing reliable and usable data for the regional studies of multinational character may be the most difficult aspects of coastal zone management.

Before further steps are taken every attempt must be made to collect, combine and harmonize the scattered data so that a kind of information system can be created. Such a system is expected to cover researchers, local and central authorities, multinational bodies, NGO's, commercial companies, relevant sectors, public representatives etc. both with regard to their competence and the data they hold.

As in the case of the Mediterranean Region, coastal zone management is often a very heterogeneous and multinational process that takes concerted action, which means infrastructure, development, management and conservation plans funded and/or produced by international organizations, different group of countries, international companies, individual countries and sectors need to be communicated among the parties involved so that some consensus, at least a common basis for negotiation, can be achieved.

Rich resources, highly complex ecological systems, biodiversity, socioeconomic differences and cultural patterns of the Mediterranean Coastal Zone requires a delicate, scientific but also socioeconomic approach to soil, water, natural plant cover, wildlife, infrastructure, agriculture, industry, urbanization, tourism etc.

In this study, the above-mentioned facts are tested on a part of Aegean coast that is a typical segment of the Mediterranean concept so that the distinctions and contradictions between development and management can be understood.

1. GENERAL APPROACH

The amount of investment and effort spent on coastal zone management is much bigger than many other types of environment. Thus, investment and effort are issues of two directions from local level to central authority and vise versa. The reasons coastal zone and relevant issues considered so important are: (i) protecting investments and property on the shoreline, (ii) protecting and conserving a series of resources, physiographic sites and ecosystems of economical significance, and (iii) balancing and integrating uses and requirements on these ecosystems and resources (resource management for coastal zones). In reality most of the management approaches intensify their efforts only on the first issue mentioned above. Some others may seem to cover all three aims to some extent. No matter how extensive the aims of coastal management are, any approach that doesn't take the interaction of people with the resources and ecological systems into consideration is useless and a waste of time, money and effort.

Unfortunately coastal degradation is generally evaluated on the basis of profit and development to prevent material and immobile property losses. Loss of lives, environmental qualities, local socioeconomic, cultural and traditional values are generally disregarded, ignored on purpose or very often considered as obstacles for further development. If the concepts can properly be described and

reliable instruments for implementation can be facilitated, coastal management can provide reliable tools to combine development and protection processes for the continuity of common/global long-term benefits instead of short-term profits of small groups or individuals.

Necessity of protecting coastal areas and relevant values are the main reasons for coastal management. But all the coastlines especially that of the Mediterranean keep getting ever increasing heavy pressure that threatens unique, irreplaceable and/or non-renewable resources and values. Amazingly, in practice, the contents of development and management are considered the same. This cannot be accepted; the main ideas behind the two concepts are different. On the basis of economics the relevant activities that use the physical features of the coasts cannot be located anywhere else at least more cheaply. Changing agricultural patterns, port related transportation facilities, industries, power stations are some examples of economic activities found on the coastal lines of the economically developed world. On the other hand, tourism and recreation demands of these economically developed (rich) countries tend to head towards economically less developed countries that can supply the sea, sun, sand, fun, surf, etc.

Heavy pressures resulting from intensive demands stimulated coastal management towards the end of the twentieth century. Growing environmental concerns about the coastal zone brought a new vision that considers the coasts as a system of physical and biological domains that are threatened by economic and cultural forces. Thus, the need for conservation on the basis of their scientific value being their position at the interface between land and sea unique. This further requirement for coastal management must also ref1ect the potential for a different approach, consensual rather than confrontational, underlying the way in which coastal zone problems can be handled. However, this changing attitude ref1ecting an ecological perspective is not a change due solely to the virtues of ecological thinking. Rather, the change is due to the inability of most governments to meet the unbearable financial demands of ever-increasing coastal development and relevant problems.

Those countries, which centrally guide their coastline, tend to be economically advanced with a history of coastal investment that was built on a technological and fiscal base sufficient to confront the perceived coastal protection requirements. But now a crisis of ability is occurring in countries, where technology and finances are proving uncertain in the face of continuing coastal pressures. Central governments are seeking new approaches for underpinning coastal management that will be low-cost as well as cost-effective. Such low-cost measures move the emphasis of people's response to coasts from development and relevant protection to management. And to manage effectively, better recognition of the processes and elements that define the coastal system is necessary (Orford, 1993).

1.1 The beach is a system

Beach is a physiographic structure with a buffer function against wave energy and tidal movements. Sediments of any size found at the edge of the sea create beaches as energy buffer and/or filter. The action of waves in creating a sand and/or gravel beach is more obvious than the action of tidal currents that can form an energy filter and/or buffer through the deposition of very fine sediments which in the inter-tidal zone (a type of wetland) are often associated with salt-tolerant vegetation such as marsh. The coarser the beach sediment the more exposed the beach is to wave energy. Regardless of size, sediment has value as beach fill material, but the equilibrium between erosion and beach stability depends both on sediment-size and energy-exposure. These vitally important natural processes and interdependency are often ignored by coastal developers (Orford, 1993). The term *coastal development* based on engineering is not sufficient to explain the natural processes and to meet contemporary needs. For this reason, a holistic approach and/or concept, *coastal management,* which takes ecological background of coastal zones into consideration, should be adopted. The prime requisite of coastal management is coherence and regional integration.

Identification of homogenous coastal units (cells) is only a first stage in the management and planning process because these units often show integration into hierarchies of different sizes. Identification of these hierarchical structures can create a powerful basis to the regional perspective of coastal planning. In the case of open coasts, distinction of shoreline units is possible, which then can be related and integrated. But the irregular coasts usually do not consist of isolated units. Coastal response to a different coastal forcing such as sea-level rise can also be assessed through a holistic perspective.

Continuity with its temporal and spatial dimensions describes beaches and their sediment behavior. Spatial continuity reflects the nature of a beach as a conveyor by which sediment is moved. The direction

and rate of movement are highly variable depending on energy forcing that occurs at a range of temporal scales. Sediment source, i.e. the origin of the sediment, is historically dependent on sea-level change. In general, a rise or fall in mean sea level will force fresh sediment from the near shore into the interstitial zone, but may also promote loss to the offshore zone as well. Sediment motion alongshore generally operates independently of sea-level change status. Landward sediment comes from two main sources; rivers and cliffs. The former are particularly important in the lower latitudes where large catchments support significant discharges of sand and mud to the coastal zone. When such sources are impeded (e.g. by dams or water abstraction), severe depletion of delta lowlands and associated down-drift coasts is inevitable (Orford, 1993). If sustaining the beach is a major goal of coastal management, then an understanding of beach origin and evolution is essential for effective coastal management programs. In this respect, any beach should be regarded as the core element of a coastal system.

1.2 Ecological Considerations

As a first step coastal management efforts must be intensified on the formation, evolution and variation of the sediment volume referred to as a beach. Examining a beach ecologically can indicate the problems requiring coastal management solutions. Indeed, absence or reduction of the beach is the basis of coastal management problems related to the initial aspect of protection. When a beach is present, the mobile and flexible characters of such a buffer can absorb/ref1ect the energy of waves. Without the presence of a beach, the terrestrial edge receives wave energy, causing erosion and property damage. The presence or absence of a beach is considered a problem when this process affects human life. And the issue of coastal protection becomes the central problem of coastal management.

The coastal system must be understood as a coherent and continuous entity in which sediment movement has the primary role. Thus any attempt to control sediment movements and inputs must be evaluated through a broader perspective. An appropriate approach of coastal management needs to consider sediment budget for the coast.

The nature of the sediment pathways in a coastal system will define the morphologicaland sedimentological structure of the units that make up the coast. Coastal management needs to recognize the nature and distribution of energy that controls such domains. Landfills and estuary barriers are examples of methods by which processes may be changed in a macro sense. Coastal management needs to be adjusted with respect to the nature of extreme events dominating the coastal system (Orford, 1993).

The distinction between a moderate storm and resulting flood (marginal terrestrial zone damage occurs, if not absorbed by the beach system), and a heavy storm associated with severe flood (overwhelming the beach system and causing mass destruction in the coastal zone by flooding and accompanying wind damage) is quite clear. Much of the management efforts are concentrated on the experience of developed countries whose coastal development is based around a property-owning population. Thus, coastal policy emphasizes property protection for the masses. But, this model of management is often inappropriate for societies where the majority of the population is less developed. There are sharp differences in both policy approach and instruments of action (coastal management) as well as aesthetic considerations between developed and developing countries (Orford, 1993). On the other hand, we keep talking about holistic/integrated approaches to ecosystems and globalization of concepts. If this were the case, because of ecological unity of the coastal systems, this sharp distinction between developed (rich) and developing (poor) should have no meaning.

2. DATA MANAGEMENT

It is obvious that both for socioeconomic and environmental studies reliable quantitative and qualitative data in usable format are necessary. Almost in every study especially in the case of developing countries data acquisition appears to be the most important and difficult step, which may seriously hinder further efforts. As a result any study lacking necessary data, inevitably remains nothing but a written material with no practical value for implementation.

Undoubtedly this discouraging and disappointing result is not what we expect after all the efforts. On the other hand, reliability of a study is closely related to the availability of required data in various user-friendly formats to support inter-sectoral, administrative, mobilized, multinational tasks. Perhaps acquiring and sharing reliable and usable data for the regional studies of multinational character is the most difficult and important aspect of coastal zone management.

To manage data properly, before further steps are taken, every attempt must be made to collect, combine, process and harmonize the scattered data, which can lead to a kind of information system. Such a system is expected to include scientists, academicians, local and central authorities, NGO's, commercial companies, relevant sectors, public representatives etc. both with regard to their competence and the data they hold. The system may consist of both conventional and electronic mailing lists, contacts and communication opportunities in addition to environmental, social, economic and statistical data. With the assistance of the information system, a multidisciplinary and participatory approach may be achieved at the beginning phase of coastal zone management and achievement can efficiently be demonstrated through pilot areas and/or studies and management projects. Sustaining, keeping efficient and improving such an information system is vitally important and more difficult than establishing it. Therefore, continuity of such a system must be ensured by a permanent and accessible multinational body.

2.1. Multinational aspect

As in the case of the Mediterranean Region, coastal zone management is often a very heterogeneous and multinational process that takes concerted action which means that infrastructure, development, management and conservation plans as well as implementations funded and/or produced by international organizations (such as UNDP, UNEP, IMF, WWF etc), different groups of countries (such as EU), international companies, individual countries and sectors need to be communicated among the involved parties so that some consensus, at least a common basis for negotiation, can be achieved.

One of the most significant steps is perhaps the Barcelona Conference that met on 27 and 28 November 1995 with the participation of 15 EU member states and those of 12 non-member countries (Algeria, Cyprus, Egypt, Israel, Jordan, Lebanon, Malta, Morocco, Syria, Tunisia, Turkey, Palestinian Authority). At the end a final declaration was adopted to establish a comprehensive partnership among the participants through strengthened political dialogue on a regular basis, the development of economic and financial cooperation and greater emphasis on the social, cultural and human dimension. The main points of the Barcelona Declaration can be summarized as follows:

- *Political and security partnership:* peace, stability and security of the Mediterranean region are a common asset. It is agreed to conduct a strengthened political dialogue at regular intervals, based on observance of essential principles of international law.
- *Economic and Financial Partnership (shared prosperity):* participants emphasized the importance of sustainable and balanced economic and social development to achieve an area of shared prosperity. Involved parties have to take up common challenges for the following long-term objectives: (i) acceleration of the sustainable socio-economic development process (ii) improvement of living conditions and employment level and reduction in the development gap in the Euro-Mediterranean region (iii) encouragement of regional cooperation and integration.

Within this context it has been agreed to establish an economic and financial partnership for the progressive establishment of a free-trade area. It has been decided to facilitate the establishment of a free-trade area through (i) the adoption of suitable measures as regards rules of origin, certification, protection of intellectual and industrial property rights and competition (ii) the pursuit and the development of policies based on the principles of market economy and levels of development (iii) the adjustment and modernization of economic and social structures, giving priority to the promotion and development of the private sector.

The Barcelona Convention and the Mediterranean Action Plan recognize the importance of environmental protection and integrating environmental concerns into relevant aspects of economic policy. They undertake to establish short and medium-term priority action programs and: (i) stress the importance of conservation and rational management of fish stocks and of improvement of cooperation on research including aquaculture; (ii) acknowledge the role of the energy sector in the Euro-Mediterranean partnership and strengthen cooperation; (iii) recognize that water supply together with suitable management and development of resources are priority issues for all Mediterranean partners; (iv) agree to cooperate in modernizing and restructuring agriculture and in promoting holistic rural development.

A substantial increase in the EU's financial assistance to its partners will be provided and relevant mechanisms will be fostered to promote technology transfer.

It has also been agreed to cooperate in other areas and it has been stressed the importance of

developing and improving infrastructures (transport systems, information technologies and telecommunication), encouraging cooperation between local authorities, strengthening scientific research capacity, promoting cooperation on statistics in order to harmonize methods and data.
Partnership in social, cultural and human affairs: encourage dialogue and respect between cultures and adopt measures to facilitate human exchanges, in particular by improving administrative procedures.
Work program:

i. *Free-trade.* The establishment of a free trade area in accordance with the principles contained in the Barcelona Declaration is an essential element of the Euro-Mediterranean partnership. Cooperation will focus on practical measures to facilitate the establishment of free trade as well as its consequences, including harmonizing rules and procedures in the customs field, harmonization of standards, elimination of unwarranted technical barriers, cooperation among statistics organizations to provide reliable data on a harmonized basis, possibilities for regional and subregional cooperation.
ii. *Industry.* Industrial modernization and increased competitiveness will be key factors for the success of the Euro-Mediterranean partnership. Cooperation will focus on adaptation of industry to the changing international environment and conditions, modernization and restructuring of existing enterprises and privatization, use of international or European standards, encouraging cooperation among SMEs.
iii. *Agriculture.* Cooperation in this area will focus on support policies implemented to diversify production, reduction of food dependency, promotion of environment-friendly agriculture, closer relations between businesses, groups and organizations, support for privatization, technical assistance and training, harmonization of plant-health and veterinary standards, integrated rural development, cooperation among rural regions, exchange of experience and know-how concerning rural development.
iv. *Transport.* Development of an efficient Trans-Mediterranean multimodal combined sea and air transport system, development of east-west land links on the southern and eastern shores of the Mediterranean, connection of Mediterranean transport networks to the Trans-European Network are among primary objectives.
v. *Energy.*

- Fostering the association of Mediterranean countries with the Treaty on the European Energy Charter
- Energy planning
- Encouraging producer-consumer dialogue
- Oil and gas exploration, refining, transportation, distribution, and regional and trans-regional trade
- Coal production and handling
- Generation and transmission of power and interconnection and development of networks
- Energy efficiency
- New and renewable sources of energy
- Energy-related environmental issues
- Development of joint research programs
- Training and information activities in the energy sector

vi. *Telecommunications and information technology.* Cooperation will focus on information and telecommunication infrastructures, regional infrastructures including links with European networks, access to existing and new services in priority fields of application.
vii. *Regional Planning.* Cooperation will focus on defining a regional planning strategy for the Euro-Mediterranean area and promoting cross-border cooperation in areas of mutual interest.
viii. *Tourism.* The cooperation actions to be initiated will relate in particular to information, promotion and training.
ix. *Environment.* Cooperation will focus on:

- Assessing environmental problems and the initiatives in the Mediterranean region
- Establishing and subsequently updating a short and medium-term priority environmental action program for integrated management of water, soil and coastal areas; management of waste; preventing and combating air pollution and pollution in the Mediterranean sea; natural heritage, landscapes and site conservation and management; Mediterranean forest protection, forest fires, erosion control, soil degradation
- Legislation and environmental monitoring; integration of environmental concerns in all policies
- Setting up a regular dialogue to monitor the implementation of the action program;
- Reinforcing regional and subregional cooperation and coordination with the Mediterranean Action Plan

- Stimulating coordination of investments from various sources, and implementation of relevant international conventions

x. *Science and Technology.* Cooperation will focus on promoting research and development, on the basis of mutual advantage, exchanging experience in the scientific sectors and promote the transfer of technology, helping train scientific and technical staff by increasing participation in joint research projects.

xi. *Water.* Water is a priority issue for all the Mediterranean partners and will gain more importance, as water scarcity becomes more pressing. The purpose of cooperation in this area will be as follows:

- Review the situation taking into account current and future needs
- Identify ways of reinforcing regional cooperation
- Make proposals for rationalizing the planning and management of water resources
- Contribute towards the creation of new sources of water

xii. *Fisheries.* Cooperation will be improved on research into fish stocks, including aquaculture, as well as into training and scientific research.

xiii. *Development of human resources.* A regular dialogue on educational policies will take place, initially focusing on vocational training, technology in education, the universities and other higher-education establishments and research.

xiv. *Municipalities and Regions.* Municipalities and regional authorities need to be closely involved in the operation of the Euro-Mediterranean Partnership. City and regional representatives will be encouraged to meet each year to take stock of their common challenges and exchange experiences. This will be organized by the European Commission and will take into account previous experience.

xv. *Dialogue between cultures and civilizations.* Given the importance of improving mutual understanding by promoting cultural exchanges and knowledge of languages, officials and experts will meet in order to make concrete proposals for action in the fields of cultural and creative heritage, cultural and artistic events and other means of cultural dissemination and training.

3. RESOURCE MANAGEMENT

Extremely rich resources, highly complex ecological systems, biodiversity, socioeconomic variety and both regular and unique cultural patterns of the Mediterranean coastal zone requires a delicate, scientific but also social approach to soil, water, forestry, fisheries and aquaculture, natural plant cover, wildlife, infrastructure, agriculture, industry, urbanization, tourism etc.

Understanding the Mediterranean coastal zone and related natural and/or ecological processes and managing the resulting resources, requires specific skills and broader visions that cannot be expressed and solved in terms of regular regional development planning approaches. Because the processes and acting forces are so complicated it is not easy to express them in terms of boundaries of cartographical data. On the other hand the local, regional and national contexts of the Mediterranean coastal management are as significant as the international aspect.

The ecological and socioeconomic components of the Mediterranean coastal zone are highly complex, diverse systems and they can only be handled through scientific approaches: soil, vegetation, habitats, human activities and finally, human settlements in the respective territory (Benessaiah, 1998).

Social aspects are very closely related to economic considerations when the interrelations between coastal areas, population (both local and regional) and local government are studied.

The use of any coastal area for any economic purpose (urbanism, tourism, recreation, agriculture, industry, fishing and/or fisheries etc) affects the economy of the coastal strip and the peripheries. Any loss of a benefit due to over and/or misuse of coastal resources may exert destructive social and economic impacts on the local and interdependent regional population. Any action either environmental or economic and even social cannot survive without the support and participation of the relevant population.

If the aimed comparison between development and management for the Mediterranean coastal region can properly be made, we may obtain the indications of sustainable development. One of the most important issues is to define the problems and conflicts first, so that most feasible and convenient technical, technological, economic, administrative and managerial tools and assistance can be provided

for proper management of the coastal zone.

In almost none of the Mediterranean countries, either developed or developing, protecting the unique resources of Mediterranean ecosystem is a major political and administrative concern. Protection or so-called sustainable use is very often used as cover for short-term economical interests and profits.

4. A DISCUSSION ON DEVELOPMENT AND MANAGEMENT

Whenever the word development (either sustainable or not) is pronounced we immediately think of intensive human involvement in shaping the land and the coast. As a matter of fact, development means making plans for natural and rural areas for economic purposes, which are then followed by heavy constructions and ever increasing uses. And the inevitable product of these efforts is a profound change in the landscape. This is very often not the product we really want both in developed and developing countries. Global response to these egocentric, so-called development activities might be destructive and irreversible. At this point, being terrified, we start talking about planning and management problems (Sözen, 2000).

Coastal management becomes a vital issue and is interpreted on the basis of economics as soon as the coastal areas and their resources become seriously threatened by various uses (such as settlements, agriculture, infrastructure, tourism etc.). Among these uses perhaps tourism is the most demanding and resource dependent but also the most fragile. The need for coastal management is not very often considered until it becomes apparent that the development process fails to cope with the problems. In practice, management appears to be very closely related to the level of development. But in reality it could be a very efficient tool if properly used. In the case of the Mediterranean coasts, because of being inhabited by various nations of great diversity of cultures, resources, processes and activities are related to ecologic, economic and social issues (from local to global scale).

Social and economic issues are closely related to all human actions (directly or indirectly) using or changing coastal resources and processes: hydrological cycles, aquifer recharge, flood control, sediment retention, recycling of toxic products etc. To be able to manage coastal regions of the Mediterranean we need to refresh and renew our knowledge of natural and basic sciences and also try to understand the natural processes that are specific to the Mediterranean coastal zone. Remaining ignorant about the mechanisms on which natural processes operate, very often results in disasters. All we need is simple rules that help us to protect the environment and natural processes as well as cultural values in order to protect the rights of present and future generations and also preserve and improve the quality of life, in other words the Mediterranean life style. To achieve this goal, continuous operation of all natural and cultural processes must be ensured. And, not to interrupt the development process, this input must be taken into consideration as a basis for coastal management. To formulate these no new technique and sophisticated scientific solutions are needed. All we have to do is to identify natural and cultural processes, and interactions between them, then determine their degree of tolerance (and /or suitability) and limitation for certain uses. But very often, the traditional economical approach considers the environment (both natural and cultural) as a uniform commodity and describes it in terms of distance and time, development costs and area per capita. But the natural and cultural values are not uniform. On the contrary, they have a great diversity as a function of geological, climatic, physiographical, pedological, historical features in addition to flora, fauna, other real values and land use patterns. Lakes, rivers, oceans, mountains are not located where economists want them to be. Their places are determined by natural processes (Sözen, 2000).

McHarg (1966) expresses this highly sophisticated matter in a very comprehensible way. We all know that nature provides endless opportunities for human use, but some areas are the most whereas some others are the least suitable for certain uses and demands. Accordingly, we have to identify the significant natural processes and cultural values and put them in order according to their value of uniqueness and degree of intolerance for various uses. If we reverse the order on the following list we get the degree of use suitability (e.g. for urban use).

Natural Process - degree of intolerance	*Use (urban) suitability*
Surface water	Flat plains
Marshes	Forests, woods
Flood plains	Steep slopes
Aquifer recharge areas	Aquifers
Aquifers	Aquifer recharge areas
Steep slopes	Flood plains
Forests, woods	Marshes
Flat Plains	Surface waters

The above mentioned classes can be studied for the Mediterranean coastal zone to identify the natural processes and possibilities as well as limitations for certain uses (urbanization, agriculture, tourism and recreation, infrastructure, waste management etc.) to establish a coastal management network in which development is also considered in terms of sustainability.

The Mediterranean has always had a rural population working mostly in the primary sector and essentially profiting from the coastal plains offering favorable conditions of soil and sunlight, and rich alluvia deposits carried by rivers. Pressures exerted on the Mediterranean soil and its coastal areas are related to non-agricultural socioeconomic land use activities such as transport infrastructures, the development of dense zones for tourism and zones of urbanization. Socio-economic aspects of the pressures on land also stem from the impact of agriculture. Agricultural transformation in the Mediterranean basin is reflected by a growing dependence on the industrial sector for farming equipment, fertilizers, pesticides and herbicides. Hydric and eolian erosion constitutes another serious threat for coastal areas, resulting both in geological phenomena and in human actions. All these degradation processes take place in a fragile climatic context and contribute to further desertification in the Southern and Eastern Mediterranean. The important relation between activity development and water availability is one of their characteristics; it is due to highly marked relief resulting in the compartmentalization of drainage basins, thus offering a considerable storage potential on the one hand, on the other hand, causing zone partitioning, which makes it difficult for the resources to be best adapted to the demand. The examples of this kind of development dilemma can be seen along the coasts of the Mediterranean, striving to strike a balance between meeting the needs of a densely occupied drainage basin (as the center of regional economy) and those of another intensive development, tourism (Benessaiah, 1998).

5. COASTAL MANAGEMENT STRATEGY FOR THE MEDITERRANEAN

Coastal management strategy needs to have a very broad perspective that helps integrating components of all the coastal ecosystems and that of social and economic systems. A strategy, such as taking scientific knowledge as a basis and concerning ever changing socio-economic demands and impacts of human activities on coastal ecosystems and resources, is necessarily a dynamic one.

Coastal management strategy within ecological and socio economic context should lead to setting up instruments and mechanisms to solve the conflicts between related existing and future and/or possible problems and human requirements as well as demands. Thus, it requires a strategical approach, in other words, strategical impact analysis and planning approach. But due to great diversity within the Mediterranean coastal zone special political, technical, technological and economic instruments must be developed to suit different situations.

With the support of a dynamic management strategy, scenarios for possible future development needs can be prepared.

For coastal zone management we have to set up reliable and acceptable resource indicators for a balanced use. These indicators can provide a borderline between development and management. We can either choose the correct indicators and go on the management side or avoid the indicators and go on the resource consuming development side.

A proper coastal management strategy needs to have a global approach to the coastal environment and interrelated ecosystems so that the indicators can be rearranged to evaluate the impacts of unforeseen impacts.

Coastal management strategy must focus on the interrelation between environmental and socio-

economic elements. This strategy with a holistic perspective must consider coastal areas and the dependent human factor as a part of an extremely dynamic and complex system. Due to the complexity of the system, it requires different planning ideas, tools and approaches. It is not easy to define coastal zone boundaries and the zones of influence. This fact may be understood by the academics, but we cannot expect the stakeholders have the same approach.

The main goal of coastal management strategy is to achieve a good knowledge basis that can help to identify and correlate resource elements and indicators.

6. A COMPARISON OF COASTAL DEVELOPMENT AND COASTAL MANAGEMENT IN PRACTICE

In order to understand the differences and similarities between coastal development and coastal management the underlying ecological principles operating on the coastal system have to be viewed and examined through a holistic approach.

The following facts can guide management related studies:

- There is no erosion problem until a structure is built on the shoreline.
- Constructions on the shoreline cause profound changes.
- Coastal development and engineering solutions try to protect property on the beach but not the beach itself as a system.
- Coastal development and engineering practices usually destroy the beach they intend to save.
- Cost of saving beach property through coastal development and engineering can often be greater than the value of the property to be saved.
- Once shoreline development and engineering activities begin they cannot be stopped.

The degree to which these facts operate depends on the problems presented by the human impact on the coasts. Very often political and economic expectations will force managers to overlook these statements every time human interference in coasts causes a problem. In general, coastal developers and to some extent coastal managers tend to be reactive rather than proactive and therefore only use above mentioned facts for minimizing the damages instead of preventing.

On the other hand, comparing the long geological history of formation of coasts with the very short story of human existence indicates that human intervention in the long-term would be unsuccessful. And for humans on some coastal areas such as the Mediterranean there will be a limited future. Accordingly coastal management cannot serve the coastal systems, if properly carried out it can only ensure a longer and safer future for human.

Physical coastal environments will never be the same once an engineered solution for any development is adopted. And ecological principles of management may fail to remove the pressures and for recovery once such a step is taken.

The recognition of the spatial attributes of beach continuity is of strategic importance incoastal management. Emphasis has been placed on the relative areas of sediment source,transport corridor and sediment sink. These three zones, spatially linked, form a long shore wave-sediment unit that can be used as the basis for coastal management and planning (Orford, 1993).

The ecological approach to coastal management indicates the effects of human activities in the physical development of coastal areas. Growing interest for coastal management policies over the last three decades is related to the need for coastal protection caused by the expansion of human populations on every part of the coastal area. To find better and more successful ways of living harmoniously with the coast, the high cost and limited benefits of engineered coastal protection have been key points in the historical development of coastal management. In some cases coastal management is still regarded as coastal development or solely as coastal protection under another name, but management should be regarded as more than protection of property and life. It is worthwhile considering why coastal management and coastal development-engineering have a relationship that is uneasy to break. In western societies people lived in a sympathetic relationship with the coast up to the industrial revolution. This symbiosis was related to a passive acceptance of the power of coastal processes and the relative impotence of people to change the course of nature. There is some evidence of positive intervention by the use of protection methods, but they rarely lead to long-term success. The switch to a more aggressive position came in the nineteenth century when people felt that they had a civil engineering facility for

developing coastal areas (the transformation of estuaries into port and harbor facilities, rapid growth of coastal towns with port facilities, major urban growth along shorelines, sea-side resorts, leisure and recreational facilities).

Industrial development looked for coastal sites that were protected and had good terrestrial access, the resort towns were often located in more exposed sites on open coasts where landscape qualities and bathing access via beaches were the important factors. Distance from inland urban centers was also important to reduce transport and traveling costs. But the initial idea of resorts on the coast was to provide active participation for swimming and bathing in the sea and benefiting from the healthy air by walking along the coast. This idea is almost forgotten now. Swimming and bathing requires a wide beach, whereas walking demands easy accessible walkways. These demands are restricted by the pressure of various dense uses on the same coastal areas.

Coastal sites with any kind of beach near urban centers were targeted for expansion. The development of static tourist-resort infrastructures meant that the retention of beaches was essential for tourism and, therefore, any beach losses had to be resisted by active intervention. This was to be provided by means of engineering structures. The lack of spatial understanding of the continuity of beaches in the solutions of nineteenth century engineering is evident in the massive engineering structures (Orford, 1993). And unfortunately that was called development. Coastal development and engineering activities due to their limited scope deal with symptoms rather than causes of problems. Very often this means that the initial problems re-occur and/or new ones are created.

Protection of coastal areas came onto the agenda as a result of pressures exerted by the people living on the coast or benefiting from the opportunities of the coastal areas. It is interesting to observe how most of the development and engineering attempts at modifying coastal areas prove to be destructive in the long-run. The main reason for this failure is not recognizing and identifying the nature of the problem. Despite all the efforts and costs such development and engineering solutions cannot help. This basic paradox has been repeatedly seen in the coastal areas of the developed world and amazingly it has been recommended as an instant solution and a valid recipe to the less developed and/or developing countries.

Although questioning of the existing approaches to coastal problems has been a growing concern since 1970s, the concept of retirement and the idea of a second house on the coast have exerted an ever-growing pressure since 1950's. This pressure is felt principally around the old coastal settlements where services required by the new ones can be met. The spatial expansion of coastal towns causes an increasing demand for protection.

This situation has been questioned by both coastal scientists and engineers on the basis of cost, benefits and efficiency. Engineered structures are too expensive, the benefits appear to be limited to a few shoreline dwellers at the expense of the national tax-paying population. Until very recently coastal management tried to meet the demands of coastal settlements for protecting the resources. Nowadays, protection with its known content is far from being satisfactory. New policies are being designed to broaden the management perspective and to question the need for protection.

Settlements on the coasts are major uses of coastal resources and mitigation of resulting impacts and sustainability of resources are key elements in modern coastal management. But usually the most difficult task of coastal management is taking over the added responsibility of the past plans, policies, decisions and actions.

If economically-advanced countries cannot afford engineering-protection oriented management, there is little chance for the economically developing countries to be able to afford engineering protection management as their front-line management strategies. In the long-term, this may prove of benefit to these countries as they will be forced to look at the causes of their coastal problems rather than treating the symptoms (Orford, 1993).

Comparing the contents of coastal development and management issues we can conclude the following facts:

Coastal development	Coastal management
Urbanism architecture and engineering	
Investment on land development	Investment on environmental resources
Mass design and heavy constructions	Environment friendly design and construction
Strong separation between constructed areas and peripheral rural and agricultural land	Harmony between new structures and existing uses
High energy consumption	Energy efficiency programs
Dominating constructions with no identity	Aesthetic considerations
Resource consuming and ignorant attitude	Self-sufficient and participatory approach
Maximized waste generation	Minimized waste generation
Cooperation	
Individual attitude and limited cooperation at local and national level	Concerted action (at multinational scale); sharing information and knowledge
Cooperation to mitigate impacts and formulate solutions locally (at local and national level)	Necessity of international cooperation due to transboundary effects of environmental deterioration
Local and national plans and actions	Regional and global efforts
Individual short-term economic benefits	Long-term social, global and environmental benefits
Economics	
Classical economy	Ecological economy
Economic growth and profit	Balanced ecological-economical approach
Pollute and pay (compensate)	Do not pollute
High rate of consumption (quantity)	Reduced consumption (quality)
Increased amounts of raw material use	Maximize secondary use and recovery programs of wastes
Energy	
Investments intensify on conventional energy, highly dependent on fossil fuels and non-renewable sources of energy	Shift investments towards renewable energy: environmentally clean energy sources such as solar energy, wind energy, hydrothermal energy
Conventional techniques and technologies, high rate of energy consumption	New techniques and technologies to reduce energy consumption
Ethics	
Ownership attitude	Stakeholder attitude, common conscience
Ignorance towards values of life (nature, culture, uniqueness etc)	Awareness, re-evaluated priorities
Human centered plans, programs and practices	Value centered approaches and understanding
Interests and profit of individuals or groups (short-term)	Public interests and benefits (long-term)
Responsibility belongs to administration	Human and public responsibility and obligations are significant
Increased material values	Increased life quality
Protection of investments and property	Protection of resources
Legislation	
Compensatory legislation	Preventive and protective legislation
National and/or regional laws and Regulations	International agreements, treaties and relevant local/national arrangements
Health	
Human health	Environmental quality and environmental health
Therapeutic medicine	Preventive, protective and therapeutic medicine
Tourism	
Hard tourism	Soft tourism
Entertainment based	Value based (appreciation of natural and cultural values)
Separation from the local people, culture and traditions	Integration with local features
Having seen that, having done that attitude	Life time experience
Holiday (sea, sun, fun) expectation	Intellectual expectations

7. A DISCUSSION ON THE USE OF COASTAL STRIP BETWEEN GÜMÜLDÜR-KUŞADASİ

7.1. General features of the area

The coastal strip subject to discussion is about 50 km long (Fig. 4). As it can be seen on the map, this road in connection with Izmir follows the route Seferihisar Doganbey-Ürkmez-Özdere-Selçuk-Kuşadası-Söke settlements. And, in Söke it joins another route, which goes down to the Southern Aegean (Didim, Bodrum, Datça, Marmaris). On this 50 km long coast there are a number of significant ancient settlements such as Colophon, Notion, Claros, Ephesus, etc. in addition to the new ones.

One of the vital watercourses of the area (Küçük Menderes) joins the sea near Selçuk and Ephesus creating fertile deltas and valuable wetland systems (*Fig 6a and b*). This small part of Aegean coast, which is quite typical, consists of a great variety of landscapes; forest covered or bare hills (*Fig.2a and b, 6b*), steep slopes with machia (*Fig. 1a*), steep rocky coasts and sandy beaches (*Fig. 5a*), fertile plains (*Fig. 3b citrus and vegetable, 8b peach*), olive groves (*Fig. 7a and b*), wetlands (*Fig. 6a, b*), summer houses (*Fig. 1b, 5b, 7a, b*), ever expanding settlements, tourist towns and facilities (*Fig. 1b, 3a, 4a, b*).

Along with natural diversity favorable climatic conditions, the rich cultural heritage of the past, year round agricultural variety and productivity, typical Mediterranean tradition of life, proximity to big cities (Izmir, Aydın, Manisa, Denizli etc.), easy access to both national and international transport facilities (airports, harbors, highways) and also good connection network towards inlands, mountains, traditional rural settlements and farms are among the main reasons of attraction. The tolerant and friendly attitude of the local people as well as safety and/or security also increase the attraction power of the area.

Except big tourist towns like Kuşadası, the main economy of the study area is sill largely based on agriculture (citrus, olive, fig, peach, certain varieties of grape, year round vegetable and cut flowers etc). These products not only make the area self-sufficient but also contribute to the economy of the country.

7.2. Management problems of the study area

The study area although rural by definition, turns into a very busy international urban area in summer that is surrounded by agricultural uses. And the summerhouses, which are totally empty for many months, come back to life after May and they stay alive until the end of September. The small settlements with a few thousand permanent population face very heavy pressure. They are unable to manage infrastructural (water, energy, sewage, roads and transportation etc) and environmental issues (domestic waste, waste water, beach quality, landscaping, noise pollution, visual pollution etc.) due to their extremely limited budget. Most of the summer houses and tourist facilities are located beyond the administrative boundaries of the municipalities. Although they depend on the near by settlements for most of their needs they behave independently and expand freely causing serious destruction around them.

As the area consists of beaches, forests, settlements, tourist facilities, summerhouses and privately owned agricultural land, managing would mean dealing with a lot of conflicts. On the other hand, these land use patterns are not stable, both agricultural land and forest area diminish in favor of summerhouses and tourist facilities. Local authorities have no power of preventing such profound changes. And, intervention of the central government is very often considered as manipulation of democratic rights.

As the settlements expand, they get closer to the forests, which are extremely sensitive to fires. Dealing with forests and forest fires is the duty of Ministry of Forestry. But, both approaching settlements and through crossing roads create great difficulty for managing this vital resource.

Fertile agricultural soils and unique products are threatened by ever growing attacks of summerhouses and tourist facilities, that are upsetting local social and economic balances. For the farmers it is almost impossible to resist the attractive offers of land developers. This short-term profit is far from solving the economic problems of the local people. On the contrary, new problems especially the social ones emerge, because previous landowners become unemployed foreigners now. Some go abroad to work, some move to bigger cities and some work for the hotels and new comers. Resulting cumulative and synergetic impacts seriously threaten traditional and unique Mediterranean agricultural products.

Fig. 1. Natural features of a typical Aegean Coast (a), human interference and sharp contradiction between the developed and non-developed parts of the same coast (b) -Özdere, 2001.

Fig. 2 Unique farmlands, deep rich soils, productive citrus and olive plantations and forest cover (a) are gradually replaced by summer houses (b) Gümüldür, 2000.

Fig. 3 Primary agricultural land (citrus plantations) is converted into constructed landscape for summer houses and tourist facilities (a, b) Gümüldür 2001.

Fig. 4. Small Aegean town of the past turned into a giant settlement of tourist facilities and summerhouses destroying olive, fig and peach plantations and wetlands (a,b) Kusadasi, 2000.

Fig. 5. There are still some well preserved coastal strips (a, Özdere), but within only a few kilometers emerging summer houses (b-Yoncaköy) replace the nature. Coastal development!

Fig. 6 Delta of Menderes River is a very large and rich wetland ecosystem (a, Pamucak), but tourist facilities have been spreading over this unique system (b).

Fig. 7. Summer houses, which look like ghost towns most of the year and come back to life only in summer and destroy most productive, fertile primary soils and valuable olive groves (a, b Kuşadası).

Fig. 8. Secondary houses (a) replacing peach plantations (b) Kuşadası-Davutlar

8. CONCLUSION

Protection through intervention cannot be accepted as an ecological approach to coastal management. The coastal system is to be treated as a delicate, coherent and continuous entity. Any attempt for any purpose to control or change sediment movement and or amount causes irreversible chain reactions. We have to understand and accept relevant unique variations of the Mediterranean coasts so that the type of interference that covers priorities on a minimized hazard basis can be planned. In a coastal system the characteristics of the sediment movement indicate the morphological and sedimentological structure of the coastal units. Coastal management recognizing the nature of these units also needs to be adjusted with respect to the nature of extreme events dominating the coastal system.

Expected climatic change could contribute to existing problems for water scarcity in many Mediterranean countries and cause a decline in water quality through increased concentrations of pollutants, salinisation and increased salt water intrusion in coastal aquifers. These may be seen as inevitable phenomenon of such a change. But the problem is already there due to various heavy uses (urbanization, tourism industry, infrastructure, agricultural fertilizations and other chemicals, wastes etc). New strategies and more holistic approaches are required for coastal management.

Urbanization and tourism-related high blocks of buildings increasing temperature and slowing winds affect the local conditions and comfort; precipitation, evaporation, ventilation, drainage patterns may change. The combined effects of urbanization, tourism and also industry seriously threaten the Mediterranean character and identity.

Natural ecosystems of the Mediterranean coasts are in danger due to intensive and ever increasing human intervention, so called development. There is no way of maintaining species diversity and ecosystem integrity artificially in the case of a profound environmental change.

Human intervention can contribute and accelerate the desertification process, which already has some alarming signs in the region.

Due to heavy use pressures and changing land use patterns, loss of natural and historical heritage combined with enhanced beach erosion and increasing water demand (but also scarcity) could have serious adverse effects on the tourist industry for which most of the Mediterranean coastal resources has been sacrificed since 1950s. As a result of hard development attitude tourism has become a major industry in Mediterranean countries with 100 million tourists in 1984 and 170-340 million expected by 2025 in coastal areas (UNEP, 1987). Mismanaged resources and short-term profit based development combined with serious growth in tourism and urbanization would add to water scarcity, land and soil problems in the region, which then would threaten agricultural production limiting the ability of sustainability and self-sufficiency.

Social and economic problems resulting from mismanagement and narrow-minded development processes directly affect more than 350 million people living in the region. And these problems have far reaching indirect effects upsetting global economic and social balances.

Current developments in the Mediterranean region are not sustainable. The most fundamental problem is the degradation of environment as a life support system by human activities. Mismanagement of these systems and resources will have diverse and far-reaching impacts for the entire Mediterranean region. An immediate concern is the rising trend of existing problems; land degradation, desertification, fresh water resources, marine ecosystems and food production. But ultimately, the impact will be much greater as the effects cascade through the social and economic system.

Now we have to make our choice; either we continue our so-called development and join the extinct past cultures in a few decades, if not sooner, or learn how to manage our resources and gained knowledge for the continuity of the Mediterranean civilization.

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