

Investigation of Integrated Coastal Management Planning Model: Problems and Solution Alternatives-Coasts of Sinop

Abstract

Coastal areas have always been fairly important areas for communities in all over the world. Also, these areas contribute to economic and social values of the community while providing a habitat for marine species with their rich flora and fauna. From past to present, always being the first choice for humankind, coastal areas have also been the most affected by human activities.

Sinop is a coastal city of Black Sea, which aimed to have an effective coastal management on environmental effects, social factors and economic elements submitting its natural beauties, history, ecological and morphological structure to the friendly use of humankind. By an effective coastal management planning of the city, it is aimed to establish and plan general policies for coasts of Sinop, which is one of the natural coastal cities of Black Sea and attracts attention with its natural beauties. With its natural beauties, coasts of Sinop was protected against environmental pollution and aimed to have areas where public can benefit from. The coastal management planning, which will enable coastal areas of Sinop to become a favorite coastal area in Black Sea, has to happen.

In accordance with the purpose pointed out in the study, the effect of population, industry, tourism, fishing activities, coast and sea structures, environment and infrastructure on coastal areas was examined. Planning in the coastal areas was examined by obtaining environment plan, zoning, coast and filling plans of the city. The results obtained were evaluated with current regulations and proposals were presented on problematic areas.

Keywords: Coastal management; Sustainability; Management plan; Coast; Coastal use; Sinop

Introduction

Urbanization and economic effects are causing new environmental problems and changes of current problems in terms of quantity and quality by putting pressure on coastal areas. This small area, where the two thirds of world population live [1], confronts us as the most vivid place where the social, economic and political relations of global system exist. According to [2], human pressure on the coastal areas causes deformation in natural structure and resources of the coast.

The units undergoing the fastest change under natural processes among various geographical formations of the earth are coastal areas. Being a center of attraction for many uses, coastal areas show the property of an important source for human life while confronting us as an important living area which needs to be protected in terms of natural wealth and biodiversity it contains due to being a transient area between land and coastal ecosystems [3,4]. Especially in the last 25-30 years, our coasts going under an intense population pressure based on the domestic and foreign tourism demand, building of second residences, excessive and unplanned housing, industrial institutions, use of coastal areas as disposal areas, uncontrolled sand extraction from beaches, coastal construction such as ports, piers, seawalls, etc. built without caring for city aesthetic and ecology, fillings made for land reclamations, excavations made in the name of coastal recreation and even highways constructed in the name of solution for transportation and many other practices clearly show how the coasts, which are the cradle of civilization and life lines of ecology, are under such a huge pressure.

There are two basic contradictions related to use of coastal resources. First; use of coastal resources to the benefit of humans and therefore necessity of consumption, second; necessity of preservation

and protection of these resources for long term use. These two contradictions have become extremely critical stage in many countries, coastal areas and resources have nonrecoverably deteriorated [5]. Black Sea coasts, which have not lost its property of being an important coastal region in terms of commerce and culture from past to present, have its share of fast and unplanned urbanization in the recent years.

It is required to perform the management mentality in integrated mentality logic in the beginning of the coastal management, share the responsibilities with a multi-discipline working logic and plan the coordination as a structure which can be completely realized. Ensuring integration in terms of important integration matters of economics, socio-culture and environment is among the requirements of coastal management being sustainable [6].

In the process of coastal management, some measures may be taken to provide increase in the effectiveness of practices and bring revenue. Taxing the polluters, taxation of manufacturing process, charges to collect from various economic activities or enterprises that may harm the environment or indirect taxes to be applied on use of motor vehicles and benefiting from coasts may be some of these measures. However, it can be said that measures such as these have not yet gotten

a strong foothold in the process of coastal management and still in the development stage [7-9].

In this study, sustainable solutions and proposals were made and evaluations for the most suitable management model is conducted concerning coasts of Sinop province, which has become an important tourism locale in Black Sea Region in the recent years.

Materials and Method

Study area

Study area is Sinop city center which is at the northernmost point of Turkey and has the property of being a natural port, important with one of a kind structure on the peninsula at the coast of Black Sea (Figure 1). Sinop, at the Black Sea coast of the country, is a typical tombolo port.

Sinop is located at the Middle Black Sea Region. Established on Boztepe Cape and Peninsula found in the Black Sea coastline, extended towards north, the city is located between $41^{\circ} 12'$, $42^{\circ} 06'$ north latitudes and $34^{\circ} 14'$, $35^{\circ} 26'$ east longitudes.

Land border length of the province is 300 km, coastline length is 175 km. Has an area of 5862 km², which covers 0,8% of the country [10]. The peninsula of Sinop has a rising morphology from south to north. There are two ports in the city, one on the northwest and the other on the southeast.

Total population of Sinop is 1.984.412 according to 2007 census. 70th province (among 80 provinces) according to size of population, annual population increase rate of Sinop is 16.16% [11]. Between the years 1970 and 2000, urban population increase of Sinop is lower than Turkey urban population increase rate and shows a parallelism. However, population increase rate of Sinop city center in 1960-1965-2007 was above Turkey urban population increase rate [14]. In general, number of people per km² is 45 and in the city center, where the population is most dense, number of people per km² is 124.

Basic evaluations on current structure of coastal areas

The purpose in planning and protecting of coastal regions should be balanced development of coasts. Coastlines and coasts are important resources to satisfy the increasing recreation needs of town-dwellers [12,13]. In the coast management, the necessity of including the areas of

the coast in two directions towards land and sea in management process as much as possible ensues [9]. For this reason, coasts are evaluated in a large scale as sea and land areas in this study.

The province of Sinop has 175 km long coastline on Black Sea. This coastline is usually straight. It extends in the northwest-southeast directions. There are cliffs in most of Sinop's coasts. In coastal areas where geomorphological conditions are convenient, ports can find the development environment.

In the study area, the biggest danger in terms of geology and geomorphology are landslides. In the land section of the study area, landslides are the most important of mass movements. Many landslides have happened in the region and still continues to happen based on the type and property of rocks, incline of slope, precipitation and especially activities disturbing the natural balance such as cutting of trees, foundation excavation, road construction. Erosion based on wave activity throughout the coastline is high in the area. High and steep coasts seen in places where landslide areas connected with the sea are mainly in west and south of Sinop. Here, the coasts have highly degraded due to sea (wave) erosion and consists of sea cliffs 20-30 meters high [14-16].

System analysis in coast management planning used for province coasts

Three sub systems were defined in the study for the coast area. These three systems are in a physical interaction with each other according to scientific analysis. All human activities in close relationship with natural system is defined based on partly to physical behaviors of people, partly direct effects of use, partly physical infrastructure and partly to pollution due to wastes. These three main systems play a crucial role on coastal areas management.

In this study, three main sub-systems are defined for coastal management:

Natural system includes all interactions of all elements that are not human (atmosphere, lithosphere, hydrosphere) between each other via abiotic, biotic and chemical processes by their own dynamics.

User functions can be defined as all areas of interest of humans provided or able to be provided from natural resources.

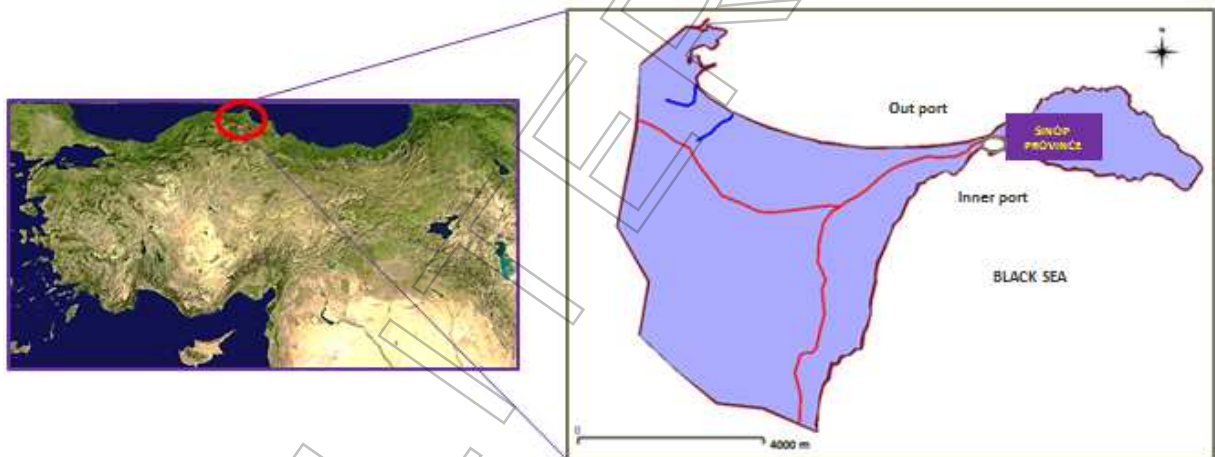


Figure 1: Study area.

□ Infrastructure includes all structures oriented to technical and organization. These infrastructures are necessary for the required user functions to exist and be used. In most circumstances, infrastructures cause planned or unplanned effects on natural system. These effects reach other user functions directly or indirectly and pressure and conflicts happen as a result (Adapted from [15]).

The purpose of coastal management is to understand, monitor and manage the processes between these three sub systems.

In the study, initially data were collected, areal planning and evaluation were conducted on coastal management of the province with the data obtained. Both verbal and written information and documents related to the subject were obtained from real and legal entities such as relevant public institutions like Provincial Municipality, Public Works and Settlement Provincial Directorate, Provincial Bank 16th Regional Directorate, the Provincial Directorate of State Hydraulic Works, Governorate Disaster Emergency Unit and Directorate of National Estate Revenue office, from private ordnance survey and law consultancy offices.

The gains to be obtained from the study are determined with the data collected. Coastal area system of the province is examined in all details, user functions are discussed as infrastructure (part of human system) and natural infrastructure system (part of nature system) in the system. By evaluating all data, a coastal management model of province was tried to be created. Besides that, institutions and organizations and objectives that may be effective in management planning.

The subjects for the SWOT analysis performed in the planning part of the study were determined, evaluations on these subjects were made. The purpose of the SWOT analysis is analysing the data obtained for the coastal management study of the province as best as possible and make a start to ensure the best practice of planning (Table 1). Accordingly the purpose of the analysis is to develop plans and strategies that will ultimately make use of strengths and opportunities, minimize the effects of threats and weaknesses by considering internal and external factors.

Through the problems revealed as a result of analysis, first the current problem was analysed and then probable solutions were set forth. During the management process, data obtained from analysis, institutional, legal and financial regulations were made use of and evaluated in terms of sustainable use of coastal areas.

Results and Discussion

The city is a peninsula surrounded by the sea with a 175 km coastal line and a sustainable coastal management and suitable applications are a must to be supplied. In order to create a good planning a SWOT analysis was to be made so that coastal needs, advantages and disadvantages of the city could be seen clearly. The data gathered through SWOT analysis are demonstrated in Table 1.

Situation analysis (SWOT)

According to the prestudies and observations made on our study area and the experience coming from knowing the region, a Strengths, Weaknesses, Opportunities and Threats Analysis (SWOT) was conducted (Tables 1 and 2). In the analysis, Strengths and Weaknesses represent the internal data, in other words data on current situation of project area while Opportunities and Threats are external data.

Level of urbanization being low and industrialization being insufficient in Sinop province caused the result of environmental problems originating from urbanization and industrialization being at the lowest level, but still the natural, historic and cultural environment has started to partly deteriorate and get damaged. When compared to other parts of the country, it is known that pollution caused by urbanization and industrialization is lesser in the coasts of Sinop.

Management plans of sub systems

Current ports and shelters: With the data obtained as a result of interviews conducted with the fishing cooperatives making use of shelters based on official records of institutions responsible of coastal structures of our country, current status of coastal fishing structures of Sinop province is revealed (Table 3).

The fishing shelter found in the city center, due to having the property of being one of the most beautiful spots in the city, sometimes faces industry-specific and administrative problems. In parallel to increase in touring and private boats other than fishing boats in the recent years, it is observed that problems started to rise in matters such as anchorage and in-shelter organization by going over shelter usage capacity. Another coastal structure used in fishing activities is the natural harbor found in Akliman (Figure 2). The natural harbor at Akliman is a structure mainly used by fishermen, with a 111 m long pier, presenting risk of irregular berthing and sanding and without an infrastructure property other than the lighthouse at the pier [17,18].

Other than the fishing coastal structures, the port found in Sinop city center is open to passenger and freight shipment. Trade is made mostly to Russia and Ukraine from the Port of Sinop, which has import and export means. However, the volume of this trade is fairly low. Still, transit ships visiting the port, although rare, provides an economic gain. Between 1993-1998, citrus exportation was made to Ukraine. In 1995-1996, it was determined that exportation was made mostly to Ukraine in citrus [19].

Shelters belonging to fishing coastal structures are having overcrowding during tourism season, just like in fishing season. Coastal areas of the province with natural and historical wealth are used in service of tourism in certain periods of year. In summer, the number of amateur fishing boats and private yatches-spee boats are causing overcrowding in use of shelters due to location of shelter being close to

Natural Structure	Economic Structure	Social Structure	Institutional Structure
Determination of natural structure properties	Determination of economic structure properties	Demographic and social structure	Determination of institutional structure properties
	Industry	Cultural and Natural Properties	
	Tourism	Residence	
	Transportation	Social Infrastructure	
	Logistics	Technical Infrastructure	
		Urban Living Quality	
		Urban Identity	

Table 1: Subjects Defined for SWOT Analysis to be conducted for Coastal Management Planning at the Province

SWOT MATRIX	Strengths	Weaknesses	Objectives In this stage of the study, an objective matrix was established. Main objective determined for Sinop coastline is sustainable use of coastal area. This purpose can only be established in a context formed by environmental, economic and social balance. Determined objectives are as follows; 1. Taking environmental measures to increase sea water quality, 2. Protecting coastal areas against settlement, 3. Protecting historical structures at the coastal areas, restore and ensure to become the province protecting historical legacy, 6. Enabling use of beaches by developing and expanding, 7. Preventing and removing unplanned housing at coastal areas and behind them, 8. Determining sea pollution concentrations of land based polluters and turn sea environment back to its natural state.
	Coastal region of Sinop being an attraction center at national level with its natural structure, morphology and undisturbed natural and cultural values in the back regions Sinop being a preferred tourism spot of Black Sea in the last 5 years at the national level Coastal section not yet settled, creating opportunities for the future Having critical and important areas in terms of natural life and having protection status concerning these areas The presence of many geological formations like natural beauties such as coves in the coastal area Nearly all settlements planning and complementary development plans being approved by Provincial Environmental Plan, municipalities having opinions and awareness on the competency status of these plans Having a potential for yacht tourism and a promising future Operation of Sinop Airport and connection of Sinop to all world via İstanbul, Currently established Sinop University	Summer tourism season being short due to climatic properties Facility development at the coastal region being relatively low, tourism capacity being low Tourism activities happening in the sea-sand-sun axis, tourism activity concentrating mostly on coastal region in Sinop province, Yatch tourism and cruise tourism having negligible values in Sinop Support uses and means (boat yard, boat maintenance and repair, etc.) to serve sea tourism being inadequate and undeveloped Sinop Port having low passenger and freight capacity Cooperation and coordination between institutions in planning and implementation at the coastal region of Sinop not being developed enough Risks brought by economy of the city and the region considerably depending on agriculture and partially tourism, national and regional political processes and global economy changing tourism dynamism from year to year	
	Opportunities	Threats	
	The concept of Integrated Coastal Areas Management being a worldwide approach and newly on the agenda and being an approach accepted internationally Positive approaches of central and local administrations and non-government organizations Important areas protected and undisturbed in terms of natural and cultural in the coastal region Local administrations giving importance towards organization works of recreative use of coastal areas, especially in Sinop city center and districts, Good will and accretion present in terms of tourism	Authority conflict between central institutions with planning and implementation authority and local administrations Not being able to include the opinions of current University of the region on and about coast, deprivation of available knowledge Having a need to re-organizing legal and administrative legislation for the best practice of country-wide coastal management Many institution and organization having planning and implementing authority High unearned income created based on development of tourism in the province dominating other types of use, other sectors not being able to compete with tourism	

Table 2: SWOT analysis results on coastal areas of the province (Updated from [17]).

Shelters	Capacity (boat and ship)
Aklıman shelter and berth	200
Sinop Harbor	300
Demirciköy Harbor	construction has been completed in 2012

Table 3: The fishing coastal structures and capacities in Sinop Province (modified from [18]).

city center and tourism potential. Also, yatches making use of shelter, while creating a good income source, in the progressing periods the shelter is wanted to be used for tourism purposes by leaving fishing activities out. The number of activities, which do not occur frequently in the province, should be increased. It can be said that this may happen by an improved management and tourism mentality.

Besides the ships coming to port in some years, Sinop may be expressed as a port city due to geographic properties, but the province is in a problematic location in terms of transportation. It is thought that if the operation of port is transferred to government from private sector, there would be improvements in the number or preference of passenger and freight ships. The port is in a notable position for the mobilization of tourism in the province.

Factors threatening coast and shore edge line

In Sinop and its surroundings, based on the rock type properties and incline of slopes, intense mass movements such as erosion or landslides are observed. Sea Wave Movements and the Effects of Landslide Structure on Formation of Coast is shown by the examination made

on the regional geology map worked by MTA (Mineral Research and Exploration) as a factor to this situation, about 15-20 km of a distance from the shore has developed shallow and about 35-40 km from this point the shallowness turns into deepness of 200 meters then reaches about 1000 meters after that point [14]. This is important in terms of wave movements, which is one of the parameters affecting formation and determination of Shore Edge Line

Waves, which the amplitude will grow by very severe wind movements, will not find a platform or a straight area to spread on like low-depressed shore formation, surging waves will be pressed into shore region and cause damage and erosion on the ground until their energy is broken and faded on the beveled cliffs from sea level. In the ground sections where ongoing active landslide is present, damage due to wave erosion is higher. It is possible to see changes due to natural causes on the shore edge line based on this change in shore morphology [20-23]. Current storey heights should be preserved in coastal areas with landslides. In coasts with landslide structure and potential, residence height is lower than inner parts of the province. In landslide or potential landslide regions which are in development area, to ensure the residences to be built continue current pattern in a health way, it may be proposed to give construction factors as 3, at most 4-5 times. Storey additions or constructions, excavation and loadings should not be allowed in these areas. Also, garden irrigations should be controlled and measures should be taken to prevent water seepage to ground.

Ground movements can be seen in nearly all coasts of city center.



Figure 2: (1st photo) Sinop Central Fishing Shelter (2nd photo) Sinop Akliman Harbor (Original, May, 2010) (3rd photo) Demirciköy Fishing Shelter Auxiliary Pier Construction (Original, November, 2010).

For the purpose of preventing this, some solution proposals have been made. One of these solutions is the supporting walls seen in frequent intervals at the inner port beaches location (Figure 3).

Measures against slides seen more especially in the regions with second residences should be taken by relevant institutions. If the landslides occurring in the region cannot be prevented, it is thought there will high probability that plots in the coast area to be submersed. It is understood that the spread of sea waves on the parcels that are lost from the landslides will be an issue in time and stated that shore edge line is in the risk of going under the sea (Figure 3).

Current changes in shores

It was tried to determine the changes made or not in some places as a result of the land works conducted in the coastal area within this scope.

Non-intervened shores: As a result of land works, the places where interventions by human hands are made or not were determined and marked on the map (Figure 4). The land work conducted in the shores includes an area of approximately 35 km. When the area was analyzed, it was detected that 84% of the area were not exposed to any intervention (Figure 4).

Intervened shores: As a result of the land works, the intervened areas which by some reasons were detected in the 35 km coastal area and they are marked in the map (Figure 4). Some changes were made in the shores of the 16% of the area. These changes can be listed as a changes resulted from the pressure on the grounds, buildings and roads, spurs and fill areas.

Fill areas

In 1981, there were lawsuits and registration lawsuits opened on the cancellation of 15 fill areas opened in the coastal area of Sinop city center and in order to demolish the buildings that were built against the law on the shore and coasts. These cases have been finalized.

12 cases that were opened again in the 1984 and finalized in the 1991-1992, related to prevention of intervention were gone to trial. Considering the contents, the cases were opened generally by people for registration application of the areas that are in the shore or coast line in their names and they were usually finalized as unfavorable.

The fill area on the road of Karakum showed in the Figure 5 is one of the fill area that is in the legal process [24].

The fill areas for recreation are available on the coastal area of Sinop City inner harbor (Figure 5). Detection of the use of coastal provinces



Figure 3: Slope and Mobility Occurring Due to Landslides (Original, June, 2010).



Figure 4: Demonstration of intervened and non-intervened coasts of Sinop city center.

of fill areas is important in terms of the implementation of Law No. 3621. At the same time, knowledge of the quality and the quantity of the coastal fill areas is a factor that can affect the features of the fill area. When the coastal area is considered as a shelter for the micro and macro level creatures, the importance of determining the fill areas becomes higher. The expansion works that were just started, which are approximately 106 meters long, are planned as a fill areas. It is thought by the authorities that the dock will expand 5 meters with this fill area and become suitable for the use of people. There will be a total of 7 fill areas in the coastal province including this one.

Changes of shore edge line

Determination of the situation of province's shore edge line and the screw plate of the shore edge line is a data necessary for the starting of coastal zone management. Determination of the coastal line as specified in the Coastal Law No. 3621 is also an important parameter, which



Figure 5: (a) old version of fill area on the road of Karakum. (b) New version of fill area on the road of Karakum (original, February, 2008) (c) Recreation area created in the inner harbor bay (Original, November, 2010).

specifies limits for the implementation of the law by identifying. The shore edge line enabling the usage of public and protecting the coasts, is stated as a first step in determining the usage rules for public welfare.

80 km of the 170 km coastal area in the province is determined and approved as the shore edge line. The areas which their shore edge lines are not identified must be done and included in the annual plan and completed by Governorship Shore Edge Line Identification Commission by taking those for settlement into consideration. The areas for identification of shore edge line without a 1/1000 or 1/5000 scaled base maps should be mapped by Provincial Special Administration in 1/1000 or 1/5000 scales. During the commission's works for identification of shore edge lines, adequate funding for making the drawings of the shore edge screw plates should be provided.

Under the Coastal Law numbered 3621/3830 and Zoning Law No. 3194 in order to prevent illegal housing made on the shore;

- Seminars and information meetings related to regulations of the Coastal Law and its application should be conducted for the village mukhtars whose villages are located in the coastal areas.
- Military police units for illegal structures should be established by Municipalities in the areas within jurisdiction of municipality, by Provincial Special Administration in the areas other than those and these units should continuously monitor and inspect whether illegal structures are built.
- The necessary interventions should be immediately made to the buildings which were started to be built illegally and completion should not be allowed. Also, illegally and unlawfully authorized buildings should be identified and processed according to Article 32 and 42 of Zoning Law No. 3194.
- According to the provisions of Section 5 of Unplanned Areas Zoning Ordinance issued according to Article 44 of Zoning Law No. 3194, structures built in villages especially on the shore edges should be built in accordance with engineering and health regulations and for the purpose of preventing illegal structures identification of village settlement areas and surroundings or when considered in larger scale, it will be appropriate that mapping within scope of Village Law No 442 should be performed within body of Provincial Special Administration or have them performed, in case of no funding regarding this issue, village grants from Provincial Bank Village Development Plan should be used for this purpose.
- Overall, in order to complete the identification of the shore edge line provincially and in Turkey general, the maps with 1/1000 or 1/5000 scale which deemed hard to complete with local capacities

should be provided as 1/5000 scale photogrammetrically topographical maps in coordination with the General Command of Mapping via mediation with the Ministry of Public Works, and shore edge line identification works would progress faster as a result of ensuring the development of undeveloped maps and delivery of these maps to provincial organizations,

- within scope of the Provisional Article 2 of Law No 2981/3290, for the purpose of resolving the buildings evaluated as against the registration and attachments, development of urban renovation projects by Mass Housing Administration in areas with dense settlement,
- Since the Zoning Law No. 3194 and No. 3621/3830 may not be considered separately, a revision must be made especially in the Zoning Law No. 3194 and ensuring integration with Law No. 3621/3830 within this revision,

In addition to this, in order to ensure the progress of the economy of the nation, providing special provisions for the Coastal Law No 3621/3830 within the scope of tourism areas, tourism centers and preventing construction of the structures in the coastal areas are opinioned [25].

Existing green areas in the province coastal areas

In the plains located in the coastal areas of the province, extending generally in the form of a narrow strip, settlement patterns show a typical residential property of the Black Sea Region. When the slope analysis of Sinop is examined, it is seen that usually 15-25% slope is present in the south- southeast of the peninsula. 0-40 % of the total slope change indicates that this area is appropriate for 2nd degree settlement [26].

Although Sinop is in the Black Sea region, green areas being fewer are remarkable (Figures 6 and 7). Green areas per capita in residential areas in the city are less than 7 m²/person. In the developing area, the green areas are more than 7m²/person. compared to the standard green areas of 10 m² / capita, 30.5 hectares of green areas are needed, 3.8 ha of this are already present and 26.7 ha of green space is still needed.

Accordingly, locations of the green areas of the city center and the coast are shown in the Figure 6. In order to prevent landslides and erosion, as mentioned above, the works or studies should be performed for the purpose of both supplying the settlement in the coastal line and fulfilling the needs of green lands. It is necessary to back up with a supporting wall where necessary and forestation of the specified areas in the city, avoiding multi-story buildings and overloading the ground. When the usage of area in the province's coast is examined, it was identified that the active green areas are very small and the available

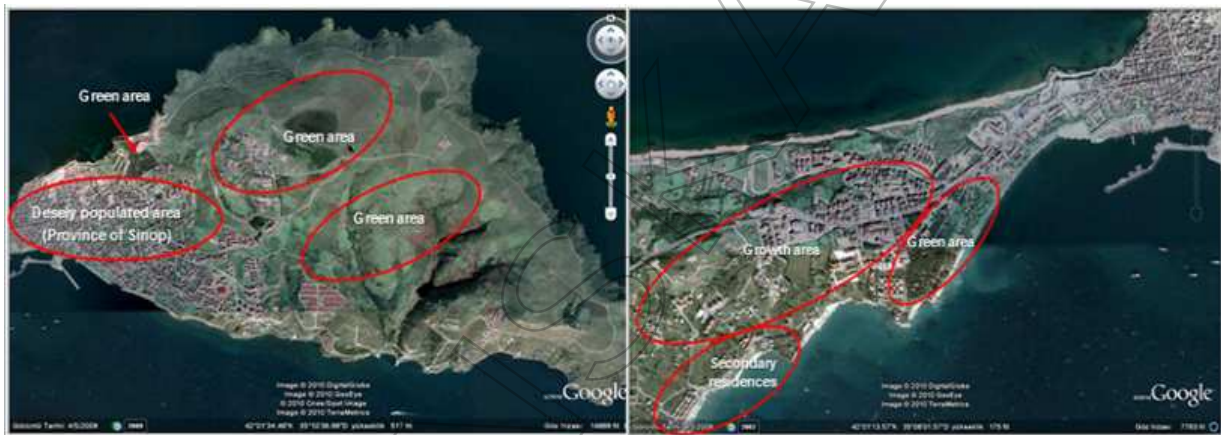


Figure 6: (1st photo) Green areas in residential areas (2nd photo), Green areas on the expansion of the province.

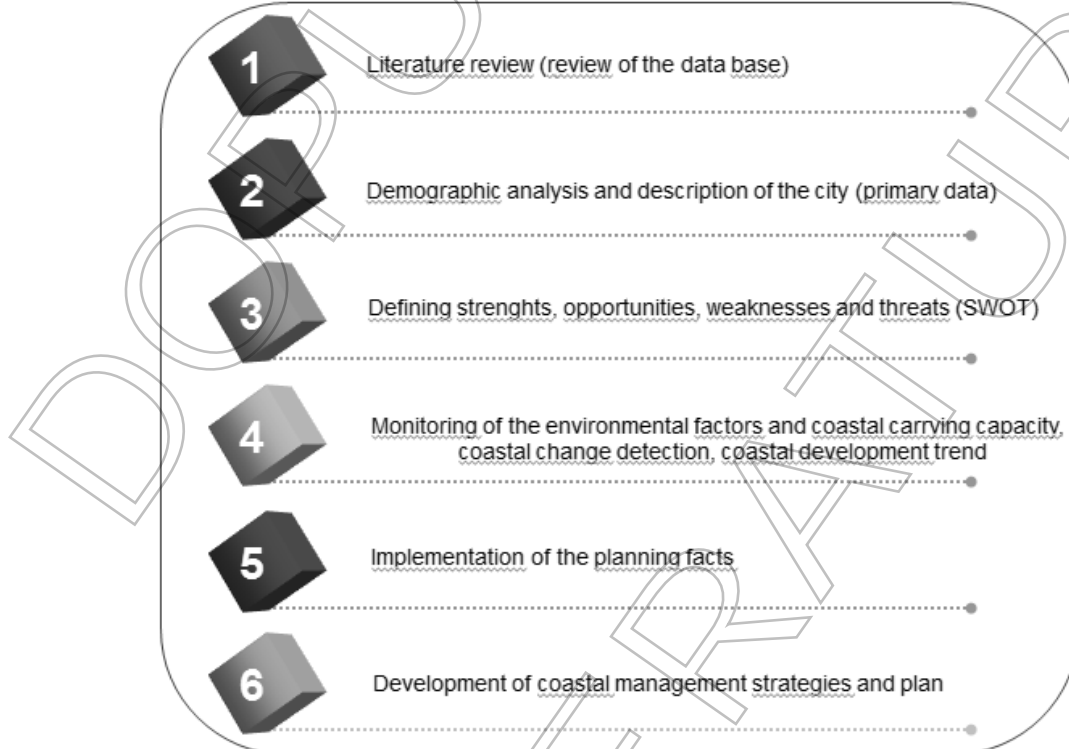


Figure 7: Diagram for Sinop coastal management plan proposal [27,28].

structuring is not in the homogeneous distribution. The walking, cycling and touring paths should be made available in the green areas and these should not be restricted to guided tours. Temporary spaces should be made available to use as cafeterias or buffets that are least damaging to the environment.

Conclusion and Recommendations

Analyzing of the coasts of Sinop in terms of all economic, social and locational sectors were evaluated by considering the generally accepted Integrated Coastal Zone Management approach. In this

context; it was determined how to use the coastal areas according to future sustainability principle and reasonably.

Provincial topics of sustainable practices are given in Table 4.

The actors of commission required to be integrated and proposed to be formed according to sustainable use of provincial coast lines according to these studies are given in Table 5. Additions may be made which may be deemed necessary in implementation stage, other than those given in the list. Local administrations are evaluated on municipality basis and official regional and provincial administrations

Conservation of Nature and Natural Water Cycle Providing sewage solutions for building constructions Not constructing new buildings without installing canalization systems and secondary improvement units and not using existing buildings Preventing all kinds of water pollution Creating separate canalization projects for rain water and used water Decreasing the negative effects of the recreational areas to environment – extending use of touristic areas Providing the alternatives to public by organizing recreational activities and decreasing the intensity at the beach areas in summer months	Prevention of Improper Use of Natural Resources Establishing a unit responsible for the coordination between institutions Analyzing the usage of land in Sinop, in order to resolve the usage being contrary to each other, Determining the principles of usage and regulations for the Province Preparing the environmental impact assessment before the the new buildings project put into practice Issuing long term regulations for water and solid waste system Diversifying the touristic and economical activities in the region Diversifying the touristic activities including open-air activities Creating activity opportunities for winter tourism and the elder visitors.
Property of Being a Quality Tourism City Protecting the natural structure and landscape of the region Diversifying the tourism understanding as to include the environmental and cultural activities, Preventing the water pollution, Encouraging the people for environmentally friendly activities such as cycling, trekking and recycling, Providing information on environment to tourists and requirement of trained personnel, Providing sufficient information to domestic and foreign tourist guides on natural surroundings of Sinop their properties, Exhibiting traditional structure by bringing local foods, handworks and architectural styles.	Increasing Local Production Capacity and Improvement of Welfare Providing priority to local community in employment Facilitating entry of handworks, local foods and guidance to their industries Encouraging the touristic activities outside the hotel Providing tourism training including foreign language and environment information in occupational schools, Diversifying regional agricultural products according to requests of tourists Including environmental training and activities to curriculum of local public schools.
Increasing Local Production Capacity and Improvement of Welfare Providing priority to local community in employment Facilitating entry of handworks, local foods and guidance to their industries Encouraging the touristic activities outside the hotel Providing tourism training including foreign language and environment information in occupational schools, Diversifying regional agricultural products according to requests of tourists Including environmental training and activities to curriculum of local public schools.	Minimizing the Negative Impact on Traditional Activities Providing adequate recreational capacity to domestic tourists in forests and beaches, Stopping construction of summer houses and hotels until all legal, infrastructural and environmental issues are resolved.

Table 4: Topics of sustainable practices and content for provincial villages.

Local Administration	Regional and Provincial Directorate	University	Professional Chamber	Other Possible Partners
Sinop Governor (The one who is in charge of mak'ng decisions, approving the decisions made , and leading the processes about everything related to the city)	Public Works and Settlement Directorate (The person who is responsible for determining the coast borders in the coastal area of the city and other housing planning, an important authority for coastal management)	Sinop University (Instructors from Engineering Faculty- Environmental management department) (It is highly important that coastal management studies should be supported by scientific data , which is significant for the sustainability and feasibility of the management. That is why, departments of universities that works on the subject should be involved in the process)	Sinop Chamber of Commerce and Industry (This chamber has to be involved in the decision-making process about any planning and application stage accompanied)	Youth center (The main aim to consider such an institution is that the opinions of young people will provide a good basis for the sustainability of the planning)
District Governorship (It is a subunit of governorship office and they perform as governorship offices in the districts)	Provincial Directorate Of Culture and Tourism (Since Sinop is a natural harbour and tourism center and a good coastal management planning and tourism should work together, this institution should be in the process)		Chamber of Environmental and Civil Engineering (They are two important occupation organization which are certified and authorized in the coastal management planning and application of the plans)	Black Sea sailing club (Since sailing is one of the most preferred activity of the coastal part of the city and the members of the union are sophisticated about the coastal area which makes them significant partners)
Sinop Municipality (It is the office which is responsible for environmental management systems which makes it a significant member of coastal management planning)	Provincial Directorate of Environmental and Urbanization (The opinions of this office on coastal management is utmost important in order to provide sustainability. Moreover, this office is able to consider coastal management with an environmental point of view)		Union of Chamber of Merchants and Craftsmen (The chamber should be authorized on the decision process of coastal area agricultural activities)	Agriculture and stockbreeding development association (During coastal area agricultural activities decision process, it is thought that this institution can be utmost assistance)
District Municipalities (The office which exactly conducts what provincial municipalities do in cities)	General Directorate of cultural and natural heritage (After Sinop along with its coastal area has been a protected area on the second degree and this decision is inspected and applied by this instution)			Aquacultural co-operative (Fishing is almost the first source of income of the city people. Therefore, the opinions of Aqua Cultural Institution should be referred)
				Public participation (It is hard to succeed in any kind of planning or application without the consent and support of the public so the opinions of public should be asked)

Table 5: Sinop ICZM Planning and Institutions likely to be included in the application.

being present within this body will facilitate contacts with the administration. In scientific consultancy, relevant units of the university will provide solution and non-governmental institutions and other organizational structures are important in terms of participation and transparency, also in coordination in terms of public and coast lines. The diagram for Sinop coastal management plan proposal according to these studies are given in Figure 7.

Mixed measures should be considered in the province, for example, protection and development measures must be provided together. The results of the study, for the purpose of use and preservation of sustainable coastal ecosystems bring recommendations to the decision-makers at national and local level, and it will be able to propose an institutional framework for implementation. Data obtained from the study will enable a status assessment for the study region and current status will be revealed and various scenarios will be created upon this status.