The Planning and Design Alternative Focused Clean Energy In Terms of Quality Living Environment

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Abstract

In recent year's requirements of more efficient and responsive using of environment and natural resources has been a topic growing importance in terms of the creation of livable healthy environment. The aims of the study is to show can be benefit from the resources more efficiently and to generate ideas for region and urban needs with incomes obtained from energy production under the energy-oriented planning and design approach. This study has been made in Foça Peninsula which is containing natural and cultural values in rural, urban and coastal areas. Firstly Foça Peninsula has been evaluated in the planning phase in 1/25.000, 1/10.000 and 1/5.000 scale. In this context; suitable potential has been demonstrated to production of renewable energy resources. Secondly the design phase has begun in 1/5.000-1/100. The urban design and landscape design guide have been made in this direction. As a result of this study, the landscape planning and landscape design projects have been produced and presented in the form layout.

Keywords: Renewable energy, landscape planning, landscape design, Foça Peninsula.

1. Introduction

Foça Peninsula holds the potential of efficient energy production and usage with its urban areas, rural areas, coasts and islands. With the idea of the underutilization of these potentials, the planning and design alternatives have been evaluated under the clean energy principles. In this context, the primary objectives of this study are: to obtain clean and efficient energy by using renewable energy resources, to use the income obtained from the energy for ecological and economical sustainability and local development. According to our aims, Foça Peninsula was covered at the planning and design works focused the clean and renewable energy.

Foça Peninsula is one of the 30 counties of İzmir province and it is 72 kilometers far from the city center. Foça County has 245 km^2 acreage and 55 km coast length. Foça urban center is established on the largest bay [1]. Across the bay there are İncir, Orak and Fener islands that make Foça a natural haven. The highest hill is Şaphane Hill which has 450 meters height, other than that there are Kartal (435m.) and Kızıldağı (352m.) hills. The plains of Foça County are Ilıpınar, Gencelli (Yenifoça-Kozbeyli), Gerenköy, Bağarası and Yenibağarası. On the border of the county flows Kışla Stream which is an important branch of Gediz River [2].
The history of Foça lies through 9th century B.C. Foça has been one of the most important settlements of Ionia with its physiography of shores and minimum slopes. The peninsula has

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historic urban civilization elements of site organization and settlement structures. The current population of Foça County is 32.141. Livelihood resources include mostly tourism, fishing and agriculture, livestock breeding and minor agricultural industries. At the total acreage of Foça; 50,6 % is forestlands, 8,9 % is rangeland, 4,7 % is settlement areas, 21 % is agricultural areas and 14 % is other areas. Because of the strategic location Foça is a military territory within [3]. Foça county was claimed as a special environment protection area in 1990 due to the natural and cultural potentials, tourism and recreational advantages, topographical-geomorphologic structures and characteristics, existing habitat of extinction Mediterranean monk seals (*Monachus monachus*) [4].

2. Methods

The method of this research depends on the systematic of dealing Foça Peninsula at planning and design studios as urban, rural and coast landscapes in the relationship of contents and scales. This research consists of two parts that are current situation analysis and evaluation of energy themed developing projects. At the beginning of this project, site, survey, SWOT, visual and physical analyses had been carried out to determine the potentials of Foça Peninsula. In the planning studio, the limiters and opportunities were evaluated in scales of 1/25.000, 1/10.000 and 1/5.000. Within this process, subjects of the main strategies and aims were listed as: energy (wind, solar, biogas), tourism, fishing and archeology. The developed strategies are tangible and feasible and they have the basis of particular energy approach and protection. Afterwards, outputs of the planning studio have been transferred to the design studio and have been taken in hand in scales of 1/5.000 and lower scales (descending to 1/100). Urban design guides and landscape designs are then created accordingly. For the tangibility of the project, sub-projects and project packages were developed on all scales and they were evaluated with the authority from similar disciplines, different universities, non-governmental organizations and the local management.

2.1. The Vision

This study aims; to enhance the quality and life standards of the Foça, to gain a new identity to the settlement by creating sustainable and more livable environment throughout the peninsula, to create holistic model of growth and development under the energy concept between the urban and rural.

2.2. The Strategies and Aims

2.2.1. The Strategies and Aims at 1/25.000

Strategy 1 - Energy: Creating a peninsula that is developed and protected by using the sun energy, wind energy and bio energy. This includes; obtaining water from Gediz River for agricultural areas by the produced energy, producing biogas to meet the need of energy by the supported industry based on agriculture, developing agriculture, archeology and industry by using renewable energy resources.

Strategy 2 - Protection: Conserving the natural and cultural heritage for future generations. This includes; making promoting suggestions to Gediz River in order to be cleaned for

irrigation of the agricultural areas, protecting and keeping the sustainability of forests, grasslands, agricultural areas.

Strategy 3 - Agriculture and Tourism: Integrating the agricultural production with the tourism sector. Creating alternatives for tourism that includes experiencing the nature and local life styles. This includes; increasing the agricultural products and production diversity, developing the rural life, agricultural economy and rich sources of the region, raising the consciousness of the locals in the rural area about the agricultural tourism, introducing the region through the diversified and forgotten agricultural products, attracting the tourists to the region, reviving the region regarding the tourism for all year round.

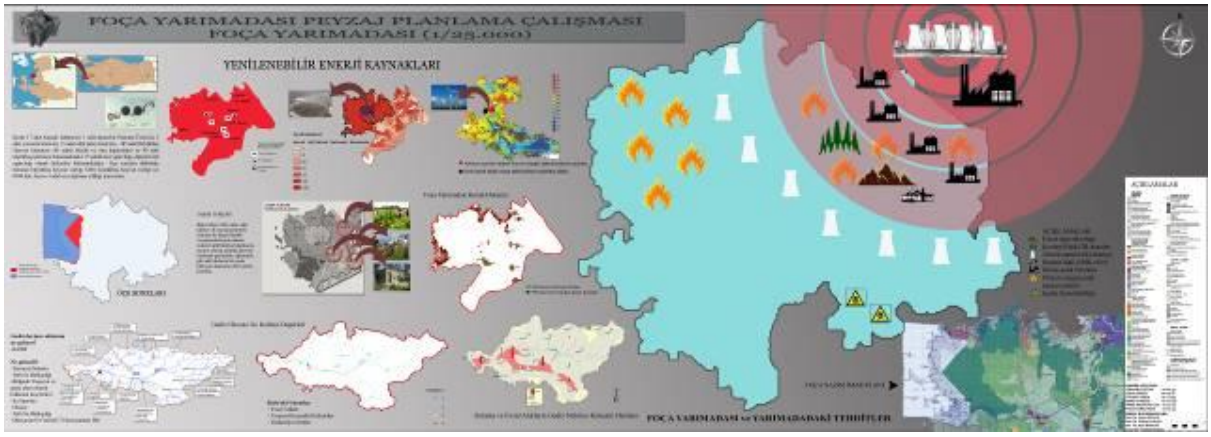

Figure 1. The strategies and aims at 1/25.000

2.2.2. The Strategies and aims at 1/10.000

Strategy 1 - Tourism: Transferring the money obtained from renewable energy resources to the tourism activities to increase the attraction of the region, developing the special historical and natural values of region and conserving them. This includes; increasing the quality of tourism facilities, the variety of the daily tourism services, the accessibility of the facilities and the presentational activities.

Strategy 2 - Fishing: Developing the fishing sector based on using renewable energy by protecting natural and cultural values throughout the Foça urban settlement and coast regions. This includes; developing the treatment plants and sewage systems effectively to protect the existing diversity of the sea products, supporting the cooperative of the sea products to avoid uncontrolled and off-season hunting, conserving the habitats of seals via of the fishing.

Strategy 3 - Protection: Supporting the enterprises for protecting of the coast, sea and seal living areas. This includes; protecting the wild life and special flora, protecting the sites of the natural, archeological and urban, using the cleared waste water for recreational purposes.

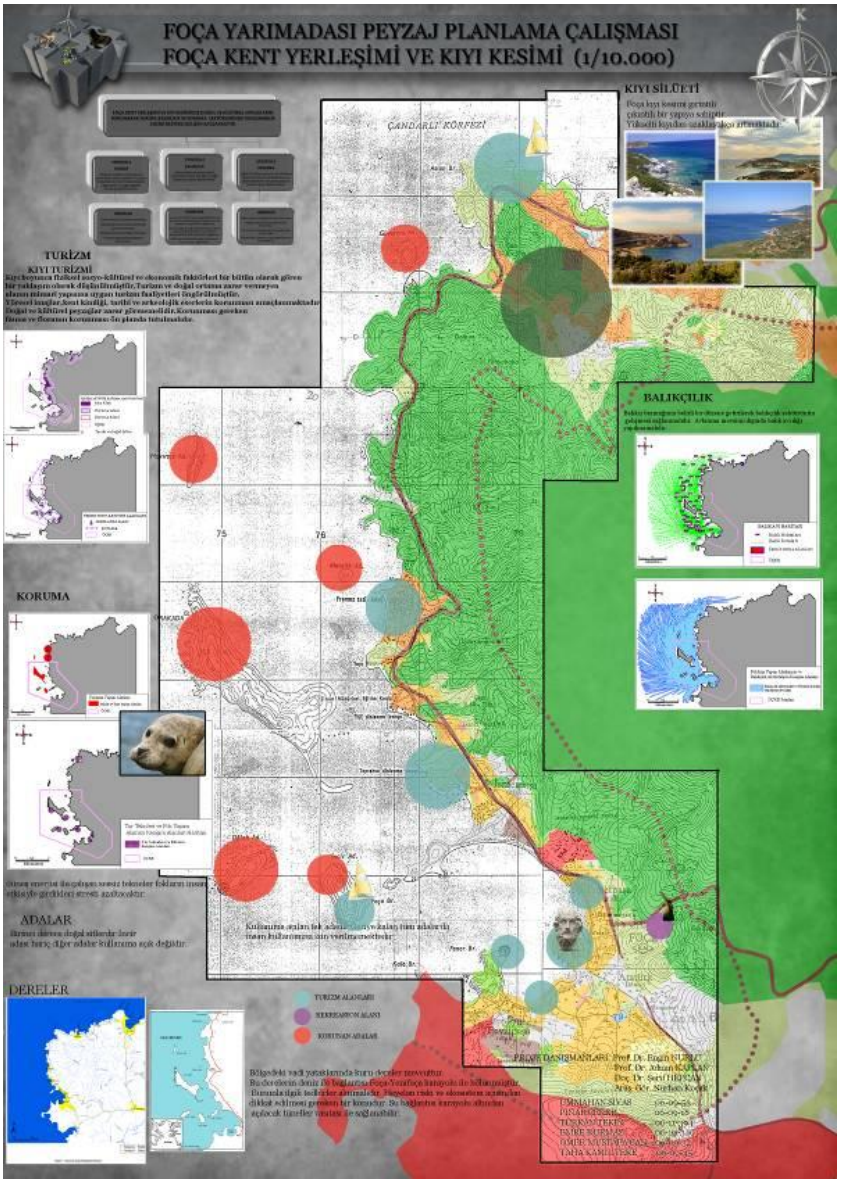

Figure 2. The strategies and aims at 1/10.000

2.2.3. Strategies and Aims at 1/5.000

Strategy 1 - Archeology and Tourism: Supporting the archeological activities to increase attraction of the region Foça urban settlement by the finance and potential obtained from renewable energy resources and organizing the festivals for this purpose. This includes; developing the archeology tourism, saving, analyzing and repairing the archeological areas and natural sites.

Strategy 2 - Protection: Examining the natural and cultural structures situated in Foça urban among the partner institutions, protecting and using them effectively within a system. This includes; ensuring the coordination among the partner institutions to protect natural, archeological and urban sites, organizing these areas for recreational activities.

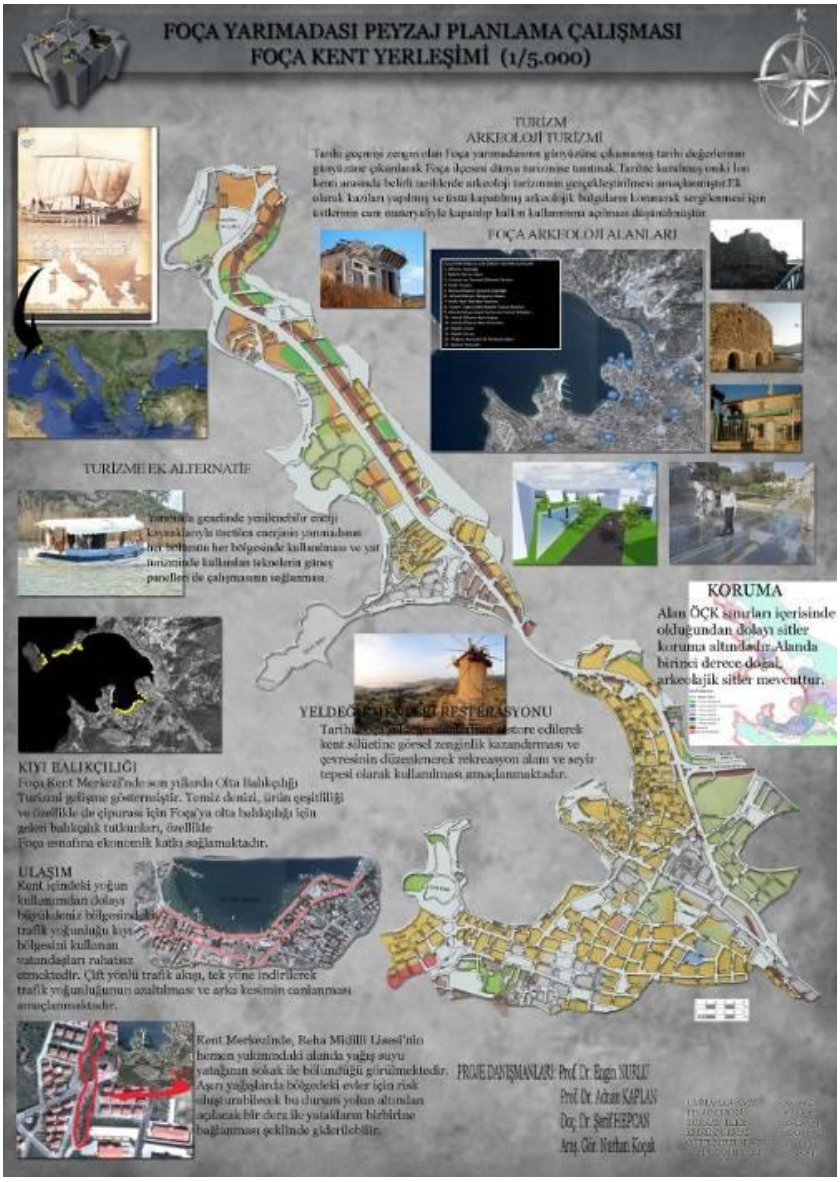

Figure 3. The strategies and aims at 1/5.000

2.3. The Urban Design Guide

The approach of developing and usage of the renewable energy throughout the peninsula and using the same concept in the designs are included in this guide. Also the precautions for natural disasters are included in the design guide.

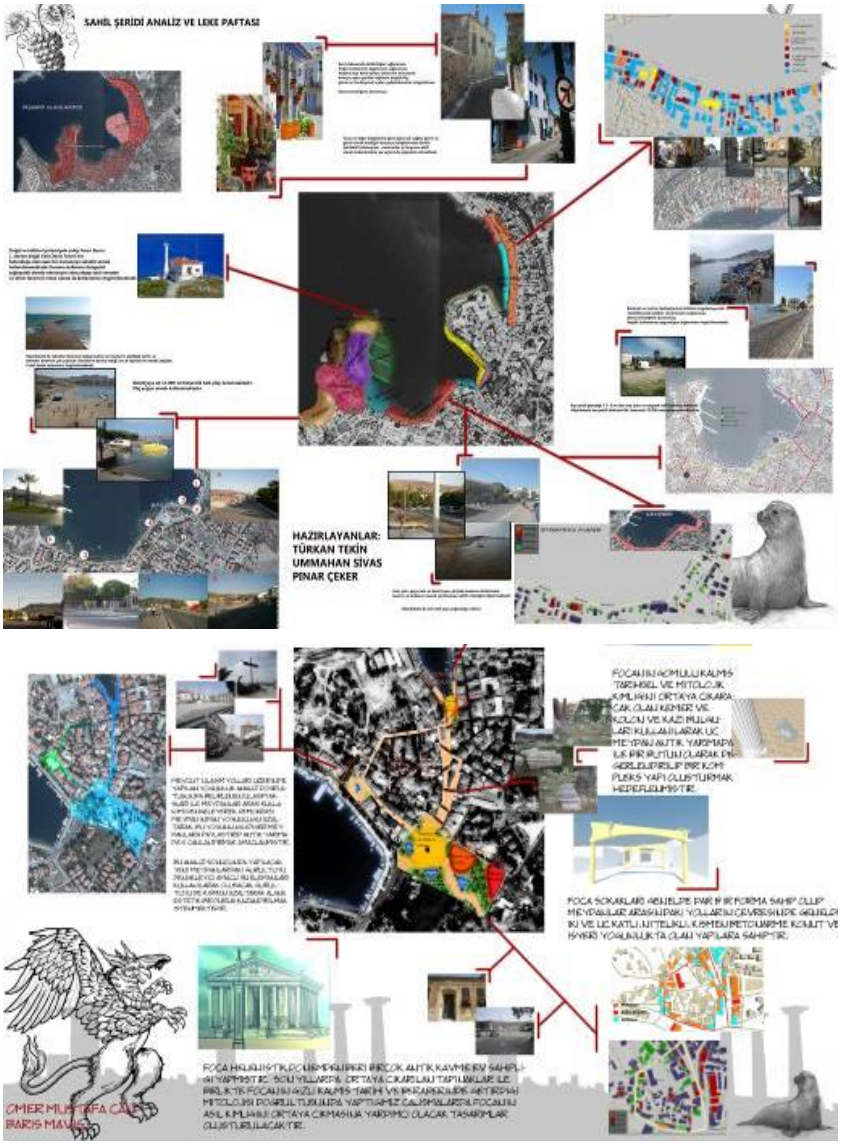

Figure 4. The example of urban design guide and spot analysis

2.4. The Urban (Landscape) Design

The urban (landscape) designs are based on the basic strategies, planning decisions and urban design guide. Designs are created with a holistic vision. In this context; urban (landscape) designs have been created to set an economic model of organizing the potential of the agriculture and tourism sectors as principle economic values.

Suggested urban (landscape) designs in the view of these basic principles;

- Managing the transportation system, decreasing the motor transport in a minimum level and organizing the public transport,
- Increasing the quality and quantity of the tourism facilities to spread the tourism activities to all year round the finance from the renewable energy resources, organizing different festivals and activities to increase promotional activities,

- Introducing the village life and supporting the rural economic development by determining the route which can develop the nature tourism, enhancing local economic growth by developing the local products and attracting tourists to the region,
- Developing the fishing sector and supporting the shore sports.

Figure 5. The examples of urban (landscape) design

3. Conclusion

This study is prepared regarding the existing values of the region to combine them together, economic and ecological troubles of the region are identified along with the planning-design principles within different scales. Also the relation of the physical, ecological and production between the rural and urban has integrated by the investment in the region. In this context, the series of the long term and realistic planning and design have been considered which are describing the physical, social, economic and ecological problems of the region.

As the last statement; the planning and design concept developed from all to the detail have reached the conclusion of foreseeing the future of Foça Peninsula as the concept of energy. Dealing with the every step of the planning and design process supporting each other like a chain has revealed the reality of the project.

3.1. The Projects at 1/25.000

Project 1- Developing peninsula by the sun energy, wind energy and bio energy

Sun energy: Foça peninsula has 2934 ha of grassland. If solar fields are made on the ¼ of this area 370 MW energy will be obtained [5]. In this project solar panels are not only used in the solar fields but also for the daily life such as street lights, special topographic figures and archeological areas. Also we aim to organize a boat tour by the concept of the antique Phokaia trireme boats which work with clear energy.

Wind energy: According to the report presented by the Renewable Energy General Management; Foça is suitable for producing the wind energy. Suitable lands have been indicated in the 1/25.000 plan for wind central. 30 MW and continuous energy were calculated for Foça only from wind energy [5]. If it is actualize Foça will be energy urban.

Biogas Energy: The aim of this project is production of low cost energy which has high efficiency. If this project is applied, environmental problems will decrease, sources will be used effective, rural employment will increase and the usage of organic fertilizers will increase. "Renewable Energy and Environmental Technologies" financial program suggested by Izmir Development Agency of 17 December 2012 is a positive development to supply finance required for the establishment of this system.

Project 2 - Providing the sustainability of natural and cultural environments

Suggesting proposals to encourage cleaning Gediz River for the healthy irrigation of the agricultural areas: The aim of these studies is to chase and control the pollution. The targets of the project are to create healthy habitats for the local and migrating birds, to provide water for the agriculture, to develop fishing and water sports through the cleaning of the Gediz River.

Ensuring the sustainability of the forest, grassland and agriculture areas: In this content; it has been considered that the productive plain, the diversity of the agricultural products (cotton, tomatoes, onions, corn, wheat, vineyards, orchards etc.), the production of the olive oil and wine in the Kozbeyli Village.

Project 3 - Combining the agricultural product to the tourism

Project includes to increase the agricultural production and diversity by applying the alternative agriculture system and to develop the properties of the region which has rural identity, agricultural economy etc. It is planned to introduce the region by organizing festivals, attract tourists to the region and revive the region throughout the year, inform the local people about agriculture tourism by the diversified and produced products such as Foça grape which is about to extinct.

In this content; agriculture tourism is planned in the villages of Foça districts. This project includes tasting foods such as the rural products, preserved foods, floury foods, cheese and the activities of the "collect by you", buying fresh ranch products and participation of the daily agricultural activities. Introducing and developing "Foça Karasi Red Wine", Foça Yoghurt, and the special olive oil are other aims of the project. Consequently regional employment opportunities and local/regional economy will increase.

3.2. The Projects at 1/10.000

Project 4- Protecting peculiar structures, historical and natural values of the region while increasing the tourism activities

To increase the accessibility of the shore, additional bus services are planned. Making tax discounts to encourage the surf and yacht tourisms is aimed. Introducing the sportive fishing activities to diversify daily tourism activities, using the shore for sea sports such as wind surf, developing the boat tours are aims of the project. The projects are planned to protect the natural, cultural and historical landscape, settlement identity, streets, historical buildings, local images.

Project 5 - Developing the fishing potential of the region

Developing the sewage and purification to protect the existing potential of the sea products, increasing the effectiveness of the water production cooperative to prevent the uncontrolled fishing, protecting the Mediterranean seal living area are the aims of the project.

Project 6 – Developing the Treatment Plants

The treatment plants are the most important investment for the Foça peninsula. But it is not enough in its current form. The water purified in these plants will be used for irrigation of the green areas of Foça and the mud remaining from the treatment will be used for production of bio gas. The gained energy will be used for electrical energy. At the end of the process the remaining mud will be used for medians and slopes in the highway.

3.3. The Projects at 1/5.000

Project 7 - Supporting the archeological researches and archeological tourism

In this context, the activity of travelling through history has been organized Foça (one of the twelve Ionian cities) and among twelve Ionian cities. It is suggested that such activities have to be planned for next years.

Project 8 - Protecting the natural and cultural buildings settled in the Foça urban center with collaborative institutes

The content of the project is providing regular coordination with collaborators to protect the natural, archeological and urban sites and organizing them for recreational activities, raising public awareness for all values of the Foça, organizing conferences and educational programs

for public, accelerating the opening of the museum, covering the archeological remains with glass panels to protect and exhibit them, offering an archeological tour for tourists.

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