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## Sustainable development and tourism in the coastal urban area of Voula in Attica Region

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### **Abstract**

*Nowadays many coastal areas in their efforts to develop, come to face with many environmental problems. These problems, economic and environmental, have occupied not only local stakeholders but also the European Union, which has issued several directives which aim to take measures immediately. This study relates to the environmental management and businesses in the coastal residential area of Voula. Specifically, the survey refers to environmental problems, tourism development, land uses, entrepreneurship, and the projects and actions that have been carried out aiming at both the region's development and at addressing environmental problems. To conduct this study a method of personal interviews with the local authorities and an in-situ research took place. The results indicated that the area faces several problems, economic and environmental. The large financial debt of the country has exacerbated the problem and taking new measures and actions is necessary for the sustainable development of the area.*

**Keywords:** *Environmental management, coastal urban area, sustainable development of Voula*

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## 1. Introduction

Nowadays the European coastal urban environment faces many social, economic and environmental challenges. These challenges differ due to the differences in geographical location, population size, social composition, functions, natural resources, economic structure and culture.

Also the intensity of urbanization, population growth and tourism are factors that put pressure on natural resources, resulting in their degradation.

To address the above challenges, the European Union has been led into policymaking and taking various measures. Such as, the Green Paper for Urban Environment in 1990 by the European Commission, the 1996 Sustainable Cities Report, the Sixth Environment Action Program, the Urban Environment Directive, Towards a Thematic Strategy on the Urban Environment (CEC, 2004), the urban dimension in Community policies for the period 2007-2013 (EC, 2010) and others.

The above problems, which the EU faces, appear also in the coastal urban area of Voula. The above are related to the timeless evolution of the residential network and urban sprawl. Today, there are traffic problems, atmospheric pollution, pressure to develop new land uses, and others.

This study refers to the management of all the above environmental problems in the coastal urban area of Voula in the Municipality of Vary-Voula-Vouliagmeni in the region of Attica.

## 2. Methodology

The survey focuses on land use, construction, natural resource degradation and enterprises, tourism activities as well as the projects and actions that have been undertaken for the development of Voula. The method of personal interviews with the relevant authorities of the area is used to complete the study. Additionally, statistical data and topographical land charts have been used and data processing was achieved with the use of Geographical Information Systems (GIS).

Then, taking into account the policies that have been applied for the construction and financing of public works through the Community support frameworks, until today, the existing situation in Voula

is assessed and measures for sustainable development of the area are proposed.

## 3. Case studies

### 3.1 District area of Voula

The area of Voula is located in the southern part of the Athens Basin and administratively belongs to the Municipality of Voula - Vari - Vouliagmeni. To the north the area borders with the Municipality of Glyfada and to the south with the area of Vouliagmeni. To the west it is confined by Saronic Gulf and to east it is confined by the mountain of Hymettus (Fig.1).

Fig. 1. Municipality of Vari-Voula-Vouliagmeni



Voula was created by a building cooperative that created a holiday settlement in the area in the decade of 1920

A large part of the area of Voula was granted to the refugees of Asia Minor in large lots for cultivation.

In 1934 it became a community (OJHR, 1943) and in 1982-2010 a Municipality (OJHR, 1982). From 2011 until today it is part of the Municipality of Vari-Voula-Vouliagmeni.

Voula started as an area of holiday for the Athens' residents, thus the other uses came much later and are concentrated in Upper and Lower Voula (EMPW, 1985).

Today the area of Voula is an urban area with a waterfront and a small hotel potential. Today, the area faces various environmental and economic problems due to the rapid reconstruction of the area and the economic crisis facing the country, as we will be discussing below.

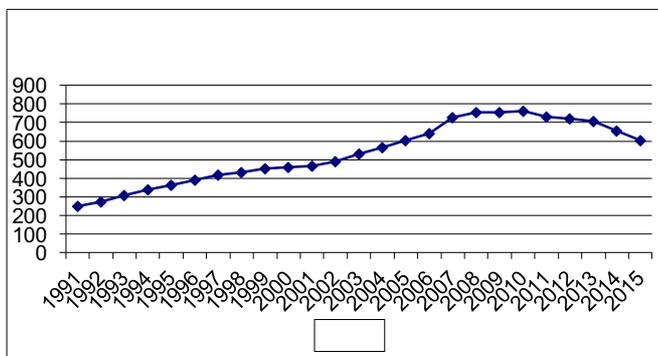
## 2.2 Economic elements- Producers sectors

With regard to the productive sectors, during the period time 1971-2001, employment in the primary sector was very low at 1.74% in 1971 and reached 0.47% in 2001. Employment in the secondary sector presents a gradually decline from 25.65 % in 1971, to 14.37% in 2001. However, employment in the tertiary sector presents an increase from 69.35% in 1971 to 75.20% in 2001. An increase was also found in unemployment, which from 1.37% in 1981 reached 6.13 % in 2001 (HSAG, 2002).

In addition, in the last decade the unemployment rate increased from 6.13% in 2001 to 12.21% in 2011. While today, the unemployment rate reached 22.7% in the Attica region. (HSAG, 2017).

The Voula area has a small number of businesses compared to other Attica municipalities. During the last few decades, the number of enterprisers in the Voula area presented an increasing trend from 1991 to 2009 which was followed by a stability in 2010 and then by a downward trend due to the country's economic recession (Fig. 2).

Fig 2. Number of enterprises in the area of Voula (ICG, 2016)



The largest number of enterprises refers to wholesale and retail trade. Sales representatives follow with vehicle trade, car and motorcycle maintenance and the trade in motor vehicle parts coming next.

Other activities such as pharmacies, grocery stores and activities associated with agriculture are present at very low rates.

## 2.3 Redevelopment works

In the area of Voula various redevelopment projects, such as the redevelopment of the Iroon Polytechniou Square during the period 2006-2008,

have been carried out (Municipality of Vari-Voula-Vouliagmeni, 2011). In 2008, the park that is located on the streets of Vasiliou Pavlou, Hera, Zeus and coastal road has been redevelopment.

Today, studies have been undertaken by the Municipality for the redevelopment of organized swimming beaches (beach of Voula).

## 2.4 Road works

The area is crossed both by Poseidonos and Vouliagmenis Avenue, through which it is connected with Athens and the southern areas of Attica.

Also, the area is connected by tram with the center of Athens via the Syntagma - Voula line, and to the Neo Faliro area, via the Neo Faliro - Voula line. The area is also served by bus lines which include 21 lines and 91 stops and connect Voula with the center of Athens and the surrounding areas

## 2.5 School infrastructure - Education

The school infrastructure includes 7 Kindergartens, 5 Primary Schools, 4 high schools and 1 Municipal Kindergarten.

## 2.6 Sporting facilities

In the area there are sports facilities such as football, tennis, basketball, gym, and other. Also, the sports facilities are also served by neighbouring municipalities. For example, the Olympic Athletic center of Elliniko and the shopping centers of Glyfada.

## 2.7 Other services

The area of Voula has a hospital (Asclepieio Voula) with approximately 400 beds and a children's recovery and rehabilitation center.

Also in the area there are private nursing homes, youth centers, a police station, a theater, a nautical club, a cinema, leisure centers, shops, banks, and a post office.

## 2.8 Open spaces - Green

The green areas in the area includes parks, islets and the area of Hymettus. The largest green parks are the National Resistance Park, the Asia Minor Park, and Georgio Voudouri Park.

The green area includes also the squares of the area such as: Crete, Iroon Polytechniou, Eleftheria, Mpakogianis Pavlou, Themis, and Moussas square.

The green areas include the part of the forest area of the hill Tassiani belonging to Voula, the forest area (of the Kastelloririou cooperative) and the hill between the Municipal Department of Voula and Vouliagmeni.

Also, the Asclepieion Hospital of Voula, includes several open and green spaces.

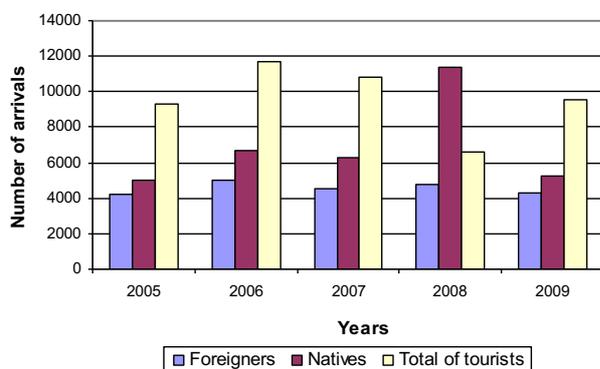
The green areas include trees, shrubs and herbaceous plants. The area is a refuge for birds (sparrows, pigeons etc.) as well as for some animals such as turtles and others.

2.9 Tourism

The area of Voula presents a small hotel potential of 155 rooms and 295 beds. In particular, there are 7 hotel units (1 hotel with 4 star 2 hotels with 3 star, 3 hotels with 2 star and 1 hotel with 1 star). Also in the area there are 4 units of rented rooms with a capacity of 66 rooms and 131 beds. The hotel units are located near the waterfront (Fig. 5).

There are also organized beaches in the area (A and B beaches of Voula). The A beach has an area of 62 acres and the second beach is 72 acres. The beach until up until 2000 was free under the supervision of the Municipality of Voula, then the management passed to the company "Apollonias Coasts SA". The second beach has been underactive in recent years. The A beach accepts a total of 250000 bathers. The highest concentration occurs during the summer months, where in weekends about 9000 bathers enter the beach.

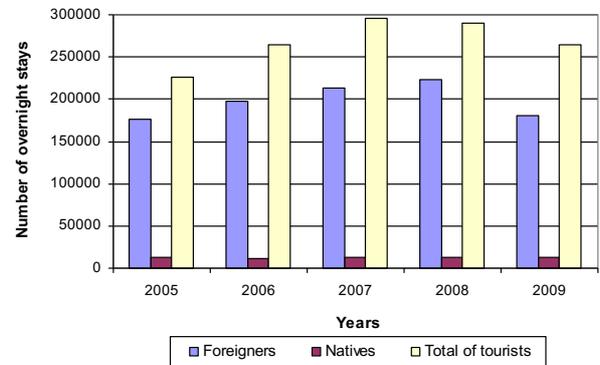
Fig 3. Tourist arrivals in the area of Voula from 2005 to 2009 (HSAG, 2010).



According to statistical data in the area of Voula, it is found that during the period time 2005-2008 there was a gradual increase in the number of arrivals, which was

followed by a fall in 2009. While the overnight stays in the area present a small increase from 2005 to 2009 (Fig.3.4).

Fig 4. Number of overnight stays in the area of Voula area from 2005 to 2009 (HSAG, 2010).



2.10 Land uses

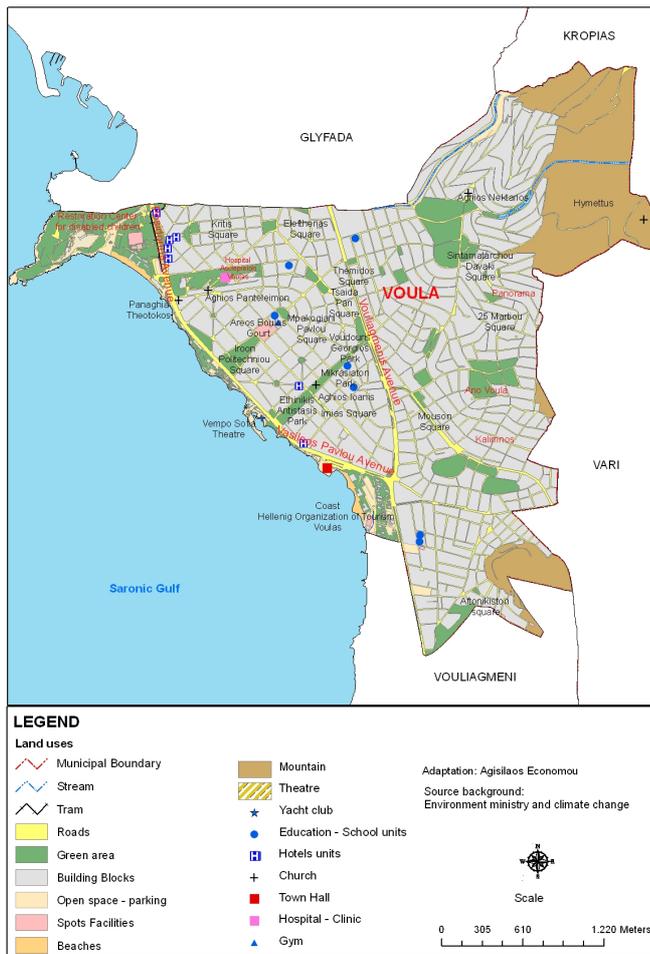
The area of Voula is an urban area, with 3319 inhabitants/Km2. Land uses include general home use, holiday and sporting activities.

While classifying land uses by area, one finds that, the largest area is covered with urban structure (urban blocks) at a percentage of (57.45%), which is followed by mountainous regions (14.44%), road network (13.58%), green areas (10.89%), open spaces (2.27%), and the remaining uses with lower rates (Table 1).

Table 1. Land uses in the area of Voula (our data processing is based on data from the Geographical Information Systems)

Area of Voula		
Land uses	Area (square meters)	%
Building square	4901592,97	57.45
Green area	928984,86	10.89
stream	36418,27	0.43
Sports facilities	33081,29	0.39
Open area-parking	193770,72	2.27
Mountains	1232184,20	14.44
Theatre and culture events	606,43	0.01
Tram	6153,75	0.07
Beaches	39802,88	0.47
Roads	1158990,71	13.58
<b>Total</b>	<b>8531586,00</b>	<b>100.00</b>

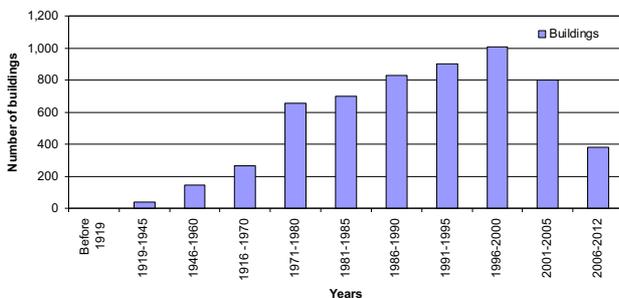
Fig.5. Land uses in the area of Voula



### 2.11 Building activities in the area of Voula.

According to the statistical data of the Hellenic Statistical Authority, it is found that the construction in the area started to increase after 1945 until 2000. Then, the construction followed a gradual decline until 2012 (Fig. 6). Today, Voula has already been built almost as a whole.

Fig. 6. Numbers of building in the area of Voula from 1919 to 2012 (HSAG, 2013).



According to the approval of the General Urban Drawing (GUD) of the district area of Voula we have (OJHR, 1993).

The general urban drawing of Voula was planned for a population of 21453 inhabitants. Specifically: Uses of pure and general residence, uses of urban center, sports facilities, schools, and crèches are permitted. An exception is made for hostels with a small potential (about 20 beds) from the use of a single residence and up to 100 beds from the general use of the house that are adjacent to Vouliagmenis Avenue in the section from Pr. Peter to the Pigadakia junction.

Also, in the area of Voula, on the plots are facing Vouliagmenis Avenue, the use of general residence of article 3 of 23.2.198 is determined (OJHR, 1987) with the exception of the professional low-level workshops and the warehouses of article 5 of Law 2965/2001 (OJHR, 2001), (OJHR, 2003).

### 3. Results and discussion

The results of the survey showed that the area presents several problems, such as:

- Traffic problems. The absence of underground or air corridors on the coastal road increases the risk during the movement of the residents to the beach.
- Illegal building
- Noise pollution. The homes which are near the coastal road are exposed to noise pollution that is caused by car traffic and by nightclubs operation.
- The coastal road breaks down the physical unity of the area with the urban environment.
- Problems of rational use of beaches. In the area of the beach, the effort for the operation of new nightclubs resulted in closing down the area, after the reaction of the residents.
- Land use problems. There is a great pressure to create commercial land uses on both sides of the coastal avenue due to easy access and open spaces. In an attempt to change the urban planning in order to add professional uses along the road network, there was a reaction by the residents to the Council of State that restored the first land uses of exclusive residence.
- High cost of transport of waste. In recent years, recycling programs have taken place, in contrast to a few years before where the recycling had relied on residents privately.

### 3.1 Measures for addressing problems

- Measures have been taken in the area in order to protect and extend green areas, as well as coastal protection measures (cleaning programs).
- Further awareness on behalf of residents for the Municipality's cleanliness and active participation by them in the recycling program.
- In order to reduce the cost of transporting waste, more transshipment stations, stations for bulky waste and pieces of pruning at a short distance from the municipality should be made. Also, there should be "green spots" for gathering recyclable materials, such as bulky items (furniture), batteries, colors, and others.
- According to the opinion of the Deputy Mayor, the area needs a free space to build a new school, a new City Hall and a cultural center.
- According to the General urban drawing of the area, free urban green areas are defined and environmental protection measures are taken, such as the protection of the forest area and the highlighting of archaeological finds.
- New interventions for the development and the quality of life are necessary, such as noise pollution measures, implementation of the 2004 Presidential Decree (OJHR, 2004) on land use and the limitations of building conditions, linking the urban fabric to the waterfront, upgrading of the infrastructure at the beach of Voula and others.
- Also, the Hospital of the area participates in waste recycling management programs, recycling of portable batteries and lubricating oils. For contaminated waste management it has signed contracts with companies that are specialized with contaminated waste.
- For the management of the waste, the Municipality has set 1200 1.100 lt mixed waste mechanical collection bins, 732 mixed waste stable collection bins of and 525 recycling bins (Municipality of Vari-Voula-Vouliagmeni, 2015).
- A separate collection system for paper, plastic, metal and glass should be developed in the area.

### 3.2 Investments in the area of Voula

During recent years, in the area of Voula various projects that are presented below have taken place (Table 2,3).

Table 2. Financial support for projects in the area of Voula

<b>Other Financial aid programs for enterprises</b>	<b>Budget (euro) (Until 5/2/2009)</b>
Road projects	2,604,528
Health and welfare infrastructure projects	1,372,000
Wastewater processing-wastewater processing projects	1,787,700
Organization- operation of final beneficiaries (recommendation/improvement/operation)	1,389,105
Advisory - Support information	100.000
Structures of human resources support	2,216,269
Infrastructure for the Information Society in Education	79,983
Infrastructure of Information Society in Public Administration	84,800
<b>Total</b>	<b>9,634,385</b>

Source: (MFIST, 2015) (Our data processing is based on Statistical Data from the Ministry of Development, 2015).

Table 3. Approved projects in National Strategic Reference Framework (NSFR) 2007-2013 (MFIST, 2015) (Our data processing is based on Statistical Data from the Ministry of Development, 2015)

<b>Approved projects in the National Strategic Reference Framework (NSFR) 2007-2013 in the area of Voula</b>	<b>Budget (euro)</b>
Construction of bicycle paths and reconfigurations in the urban environment of the area of Voula	625,722
Construction of a multi-use classroom at the 2nd Primary School of Voula	889,130
Energy saving in the area of Voula	573,130
<b>Total</b>	<b>2,087,982</b>

Source: (MFIST, 2015) (Our data processing is based on Statistical Data from the Ministry of Development, 2015)

### 3.3 Other works

The project for the redevelopment of the Iron Polytechniou square was co-funded by the European

Union (75%) and 25% by the Greek State (project budget 2,770,000.00).

The renovation of the park located between Vassiliou Pavlou Str, Hera Str, the coastal road and Zeus Str, cost a total of 3,500,000 euro (<http://www.ebdomi.com>).

In the area of Panorama, infrastructure projects (roads) of a total budget of 4392228.00 Euro were carried out (<http://www.gigerton.gr/road.html>)

Entrepreneurship in the area has also been strengthened through the NSRF 2007-2013 programs for the increase of employment and productivity, with financial support at a municipal level amounting to 8,409,886 euro.

From the above it is found that in the area of Voula there have been various projects funded by European programs carried out, and many enterprises have been financially supported. Nevertheless, unemployment remains at high level due to the country's economic recession.

#### 4. Conclusion

From the above data, today Voula is an urban area, with most of its area built. The tertiary sector predominates in the area, with emphasis on wholesale and retail businesses.

Voula provides all the necessary services for the well-being of its citizens. The presence of the hospital in the area fully covers the hospital care of the residents.

The main use of the area is general housing. Good climatic conditions, the waterfront and the high green area rate increase the living standards of the residents.

The existence of the coastal front gives the possibility to inhabitants to be employed in tourist activities. Thus, Voula has a small hotel potential for servicing tourists. The majority of tourists are foreign tourists. In general, in recent years tourism has shown a slight increase in the number of overnight stays.

However, the area faces the common problems of urban areas such as noise pollution from the traffic of cars and nightclubs on the coastal road. There are problems of land uses on the coastal front, and problems with the creation of new ones on both sides of the coastal avenue. Also, the coastal road breaks

down the natural unity of the seafront with the rest of the urban fabric.

According to the above, the area needs new interventions to address the above problems and improve the quality of life of its residents. Voula has the potential for further upgrading through the use of open spaces and its coasts. Measures should be taken to deal with issues such as noise pollution, connecting the urban fabric with the seafront, upgrading tourist infrastructure, land use planning and limiting the construction.

It is underline that except form the action of the competent authorities to address the above problems and the further development of the area, citizens' participation is necessary.

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