The impact of GIS application in the tourism development of Elbasan region

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This paper provides an initiative for the application of GIS (Geographic Information System) in the tourism industry in Albania. It is applied in Elbasan, which is an important destination in this country for both native and foreign tourists. The application of GIS consists on bringing geo-referenced data of Elbasan region, provided mainly by the District Office, into digitized maps, assigning all objects to thematic layers. The results show that GIS may help to the development of tourism industry in Elbasan region in order to become more competitive not only in Albania but also in the regional and international tourism market.

Keywords: digitized map, geographic, information, district, Internet
JEL Classifications: L83, L86

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Introduction

As in other Mediterranean countries, tourism is one of the most important industries in Albania and Elbasan represents one of the most important tourist regions in this country regarding culture, history, and tourist attractions. According to the information provided by the District Office in Elbasan, during 2010-2011 activities like hostelry, restaurant and bars, commercial centers, transport communication and other different infrastructure constructions favoring growing employment in tourist areas of Elbasan region, have increased. The Tourism Development Strategy in Elbasan, prepared by the District of Elbasan (2008), aims at a safe and important tourist destination characterised by a diversity of natural and cultural attractions in a small geographic surface. This should be managed in an environmental and social way that can be easily accessed by European tourist markets.

However, as for all Albania, the tourism industry in the Elbasan region has many difficulties about the promotion, such as the lack of graphical tourist guides and maps, lack of information based on the internet, lack of digital information for tourism facilities, insufficient promotion from the government and other public institutions, etc. Considering this problem, one of the main objectives of the "Action Pan for the Tourism development", prepared by Elbasan District and SNV Balkans in 2009, is to achieve a double increase in the number of foreign tourists until 2013 and to improve the tourism promotion through different means. Kadilli (2010) also emphasises the necessity of the new structures for the communication of the historical and cultural attractions in Elbasan city. Therefore, one solution for this situation is the application of GIS in this region and providing it online for tourists and all interested visitors. The reasons for that are explained in the following sections. So, the main aim of this paper is to apply for the first time GIS in Elbasan, an important tourism destination in Albania. The paper is organised as follows. Section 2

analyses the tourism development in Elbasan region. Section 3 presents the GIS application in tourism generally, and then Section 4 explains the GIS application in Elbasan region more specifically. Section 5 concludes.

Tourism development in Elbasan region

Elbasan is one of the largest cities in Albania and an important tourism destination with a lot of attractions. It lies in the field with the same name, in the right of river Shkumbin. It has a surface of 3292 km^2 and a population of 451.112 habitants (Source: Elbasan District, 2011). It is limited in north and north-west with Tirana, in east and south-east with Korça, in west and south-west with Berat. About 38% of Elbasan district is formed by mountains, 34% by hills and 28% by fields. There are four districts in its structure: the district of Elbasan, which is the centre of this region, the district of Librazhd, the district of Peqin and the district of Gramsh. Officially, Elbasan has 7 municipalities, 43 communes and 386 villages.

The majority of information provided by local authorities indicates that Elbasan is well-known for its traditional gastronomy, beautiful songs, and the Castle which is the only city castle in Balkans. Remains of once monumental Elbasan Castle are by far the city's best known landmark and attraction. Built in the 15th century from Sultan Mehmet II this castle was once far bigger, but parts of it were dismantled in the 1800s. Inside its walls there are numerous traditional homes and buildings as well as a 19th century built Turkish bath. Besides the Castle, Elbasan has several museums to visit and a number of churches dating back to the 15th, 17th and 18th centuries. Also, some of the main natural attractions include: the natural trees of Bysheku, the natural tree of Bezistan, the lake of Shebeniku, etc. Regarding the hospitality, Elbasan region offers a considerable number of goods hotels, restaurants etc. It has a fairly temperate climate so it's not usually too hot or too cold in the city.

Generally speaking, there are warm to hot summers with average high temperatures from 20's to 35's C from June to September. Winters are mild to cool and rains fall usually during the winter season.

GIS application in tourism

With the tremendous development of the technologies of information and its important role in the tourism industry, one can say that both information technologies and the tourism industries are two powerful tools for the economic growth of a country. Most of tourist information is distributed through different sites in the web, which is more difficult to use because of the widespread tourist information. Therefore, a better solution for this problem is the use of maps in order to present effectively the information. Tourism is concerned with travelling between close and distant places and maps are very important for the tourists who want to visit these places. However, Fajuyigbe et al. (2007) explains that, in the traditional form, a map suffers from a number of problems. For example, maps are static, which means they are difficult and expensive to keep to date. Also, map are often complex people are not always able to extract a particular data of interest.

On the contrary, through GIS, one can extract and use the different sets of information from a map. GIS is able to show a large amount of tourism information which is always up to date. The incredible role of GIS in tourism industry is defined by Semcor Company. "The concepts of time and place are ingrained in the tourism industry. Having an understanding of your customer base and where they come from, and knowing what they want to see and do and how to get them there are essential to the success of any tourism operation. Whether you are a hotel manager, a diving instructor, or a government official, a GIS can provide you with the tools you need to better prospect, understand and serve the needs of your clients" (Semcor 2001).

If people use GIS system in the tourism industry, then questions about locations, conditions, modelling, trends etc. are always easy to answer. These questions are most likely very important for all the decisions that a tourist or an investor take in order to plan a trip or to make a tourist investment. GIS provides the linkage between the spatial data and semantic information. It makes a combination between database operations and geographic analysis benefits that are offered by maps. Another definition of GIS, which explains the properties of GIS and its analytical functions, is given by Ake (2001) in Table 1.

Table 1

Definitions of GIS

Properties of GIS		GIS Analytical Functions
A process	A system for capturing, storing, checking, manipulating, analyzing and displaying data, which are spatially referenced to the earth.	Presentation and thematic mapping Data query Spatial query Database integration Route finding
A toolbox	Containing tools for collecting, storing, retrieving, transforming and displaying spatial data.	
A database	Spatially referenced entities	Point in polygon analysis Overlays Buffering Visualisation and 3-D modelling
An application	Cadastral information system, marketing information system, planning information system, etc.	
A decision support system	Integrating spatial data within a problem-solving environment	

Source: Ake, 2001

Components of GIS, according to ESRI (Environmental Systems Research Institute), are hardware, software, data and people. GIS operates in spatial data that refers to a known location on the Earth,

and the attribute data referring statistical and non location data associated with a spatial entity.

Creation of Spatial Database

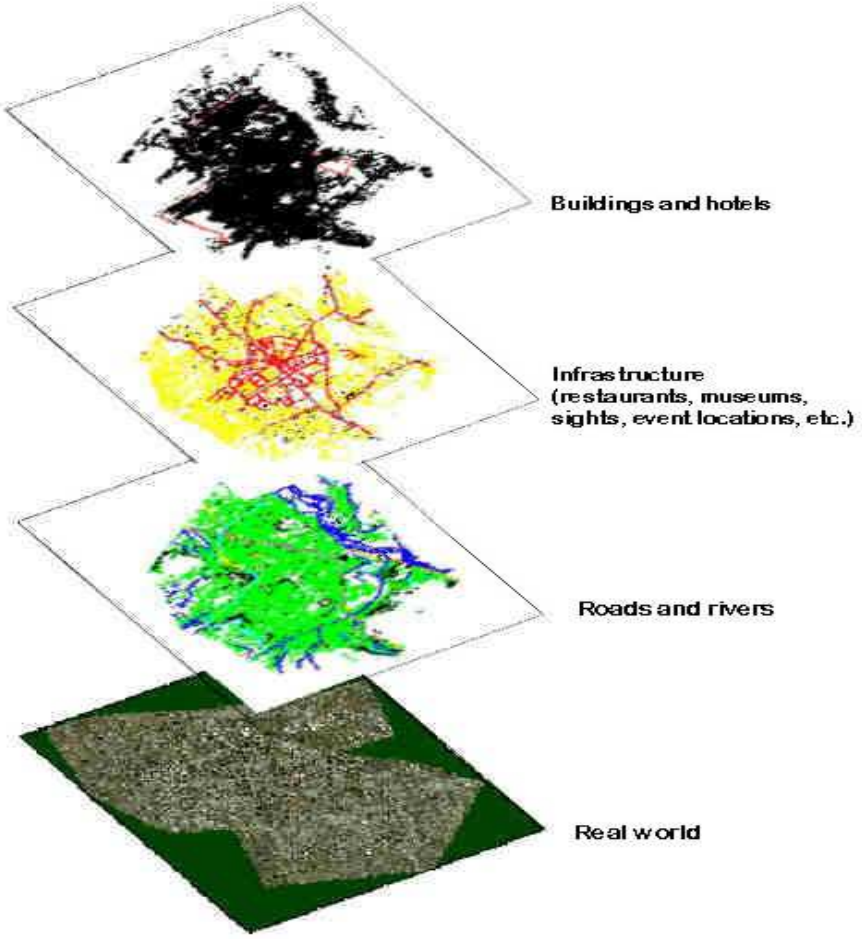
Data is the core of the GIS and the most difficult part of it to assure. The most important action is to digitize the existing map by using ArcView GIS software. The tourism facilities in this digitized map (roads, hotels etc.) are classified. The process of the spatial database creation includes the following steps:

- ✓ Acquisition of graphical map that covers the entire region,
- ✓ A tour in all the tourist centers in order to verify the existence of features and relative distances from each other,
- ✓ Conversion of all the proper maps to digital maps using ArcGIS 9.2,
- ✓ Creation of the database for each theme,
- ✓ Creation of the relationship and reports between map features,
- ✓ Transformation into real world coordinates.

In order to create the tourist map, it is necessary to consider first each thematic layer that contains each object. Then, the next step is the combination of these objects, such as roads, buildings, vegetations etc. A model of these layers is presented in Figure 1.

Figure 1

A model of thematic layers



Source: Author's application in GIS

Attribute data creation

Attribute information on the tourist facilities can be collected from different sources. Attribute data creation includes the following steps:

- Compilation and addition of text information to features and vacations in tables,

- Creation and editing of pictures and images to text labels,
- Attaching images of respective feature location using the hotlink features.

GIS is an information system that, integrated with multimedia tools, is capable to answer many questions about where facilities and resources are located. Some of its most important benefits are intelligent mapping capabilities, analytical capabilities, modeling and prediction, and revenue generation. These functionalities and revenue generation are attained from the combination of tourist attributes with geographic criteria or objects selected in a rectangular map region.

GIS is capable to create maps of the chosen themes, edit features in the map for specific purposes and update information for tourism features. So, the maps are always updated and have the capability to create the "historic map", to show the situation at some points in history. In addition, digital data may be joined with geographic data. Within a GIS, there is a combination of the simple analysis (such as statistical measures) and analysis of inter-relationships between various tourism related variables.

GIS application in Elbasan region

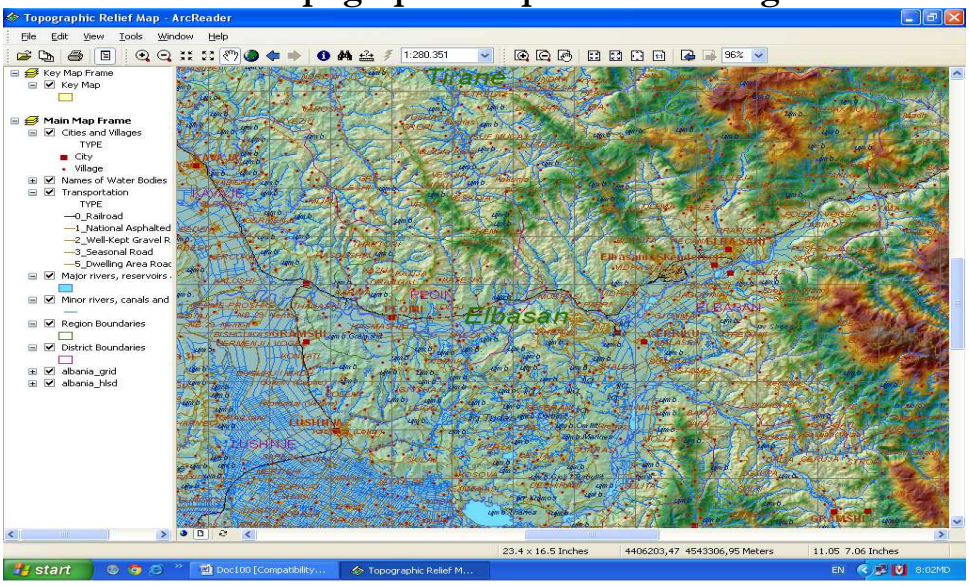
In order to apply GIS in tourism for Elbasan region we collected initially information using both primary and secondary data. Secondary data include existing tourism literature, Internet information, and particularly information provided by local authorities. So, this paper makes use of information provided by the Ministry of Tourism, Culture, Youth and Sports (MTCYS, 2011) and the Institute of Statistics (INSTAT, 2011) in Albania, in form of maps, guides, publications, brochures, etc. Also, some important tourism data is taken from the District Office of Elbasan. The department of tourism in this institution systematically collects data for the tourist places.

The tourism data is collected also through primary data. These are data collected through interviews and different observations. The

interviews were mainly unstructured interviews with representatives of local authorities and tourist centres. The majority of tourist attractions were also observed systematically in order to have more information. Based on the collected information, Figures 2-10 present several maps which are processed with GIS.

Figure 2

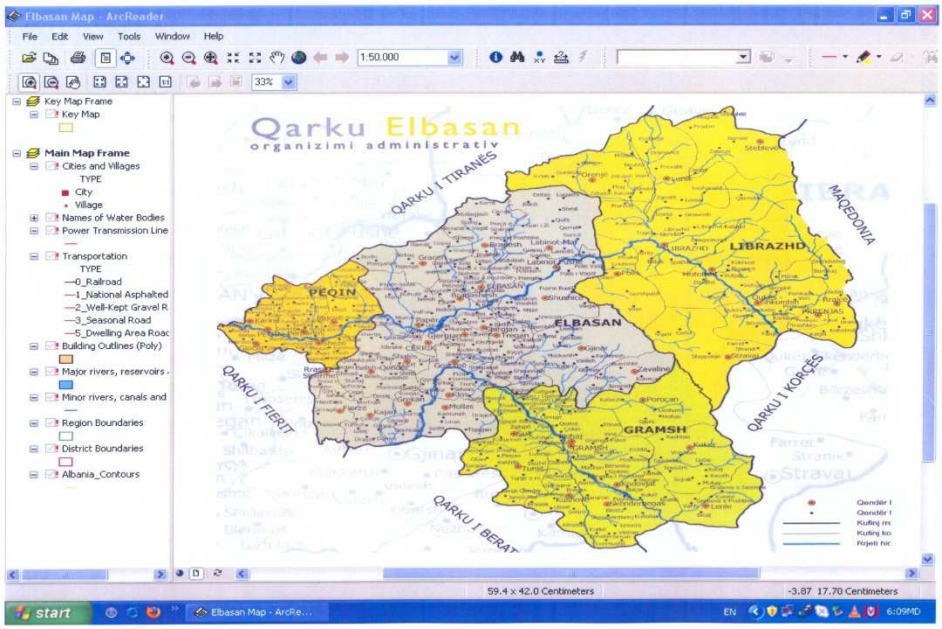
The topographic map of Elbasan region



Source: Office for coordination and development, Elbasan District

Figure 3

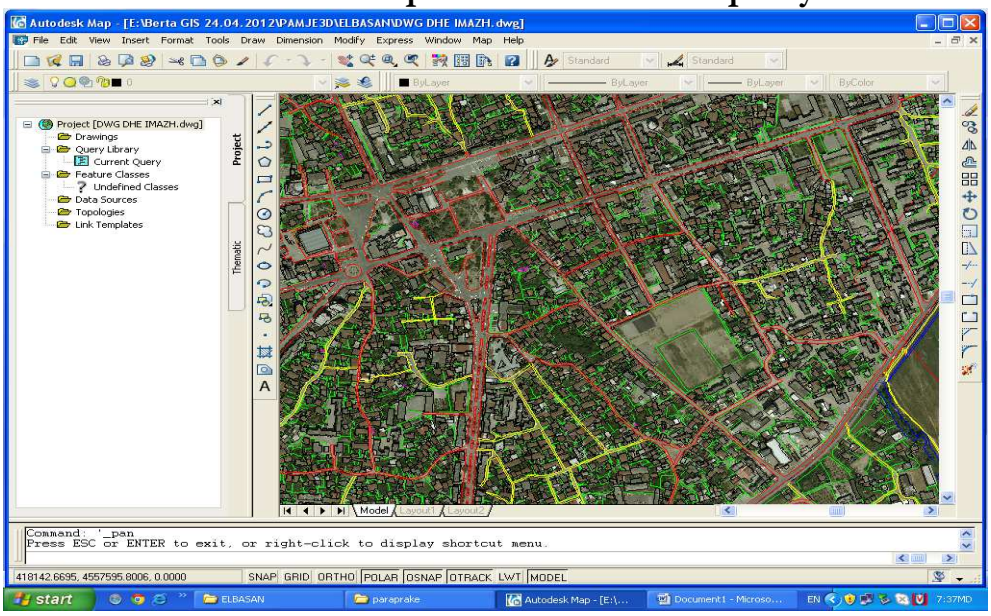
Administrative structure of Elbasan District



Source: Office for coordination and development, Elbasan District

Figure 4

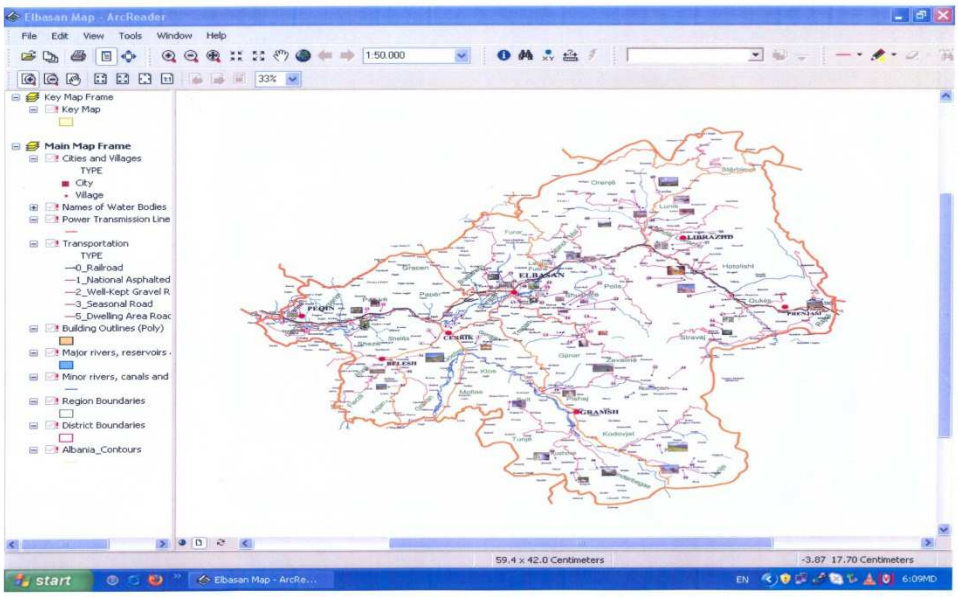
Detailed map of Elbasan Municipality



Source: Elbasan Municipality

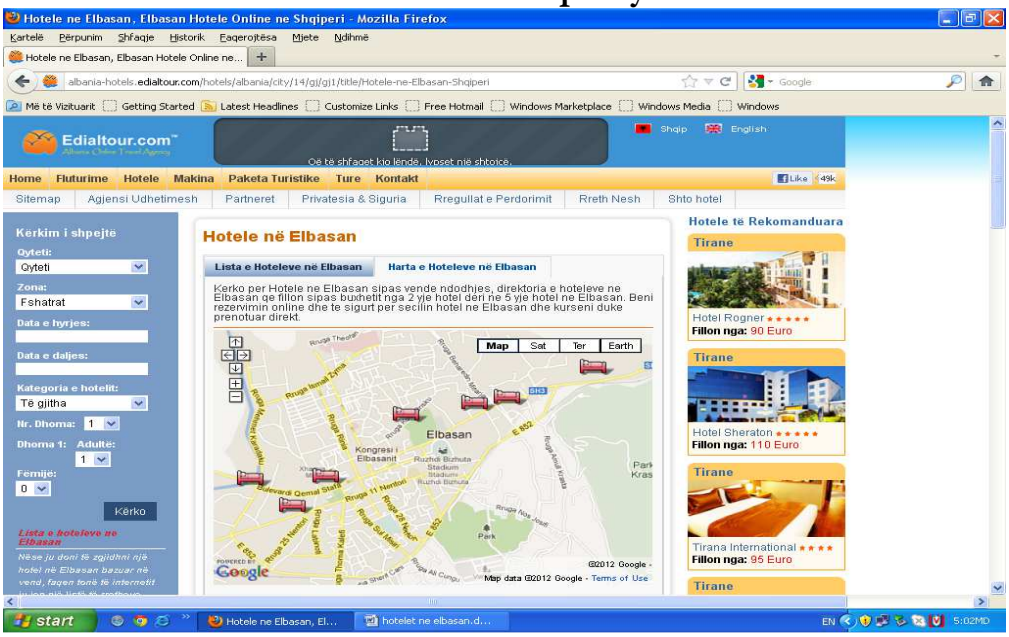
Figure 5

Tourist destinations of Elbasan District



Source: Office for coordination and development, Elbasan District

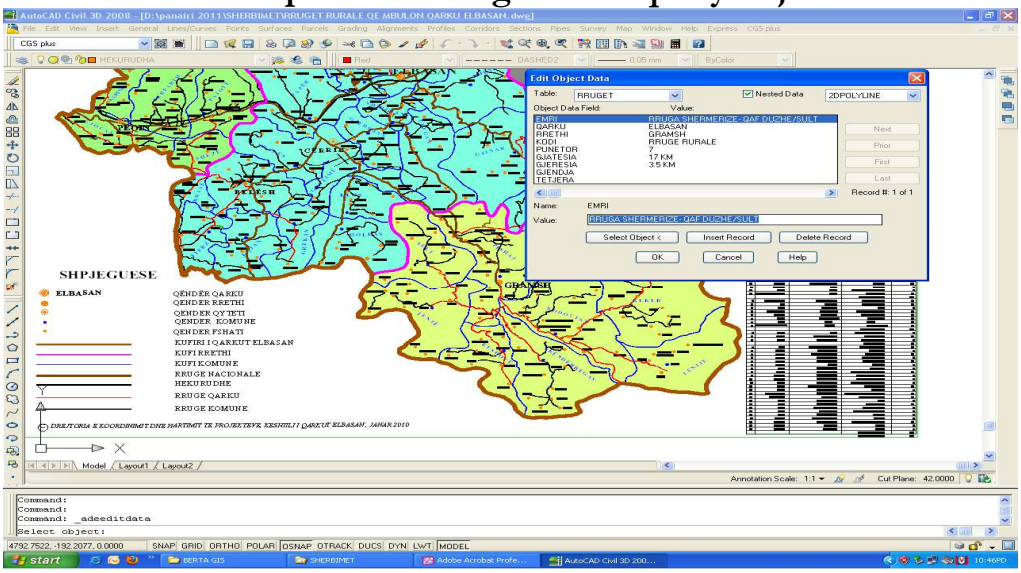
Figure 6
Hotels locations of Elbasan municipality in the Web



Source: http://albania hotels.edialtour.com/hotels/albania/city/14/gj/gj1/title/Hotele-ne-Elbasan-Shqiperi

Figure 7

Route plan and image about query objects



Source: Author's application in GIS

GIS was used in this paper as an analytical tool. After the data collection, ArcGIS 9.2. helped to create both attribute data and spatial data. So, Table 2 indicates how we elaborated the information about the layers and attributes for the different types of tourist centres.
Also, ArcView helped us to create different themes (layers) of roads, hotels, restaurants, museum etc. Finally, the whole digitized map of Elbasan region was created by overlapping all these layers.

Table 2

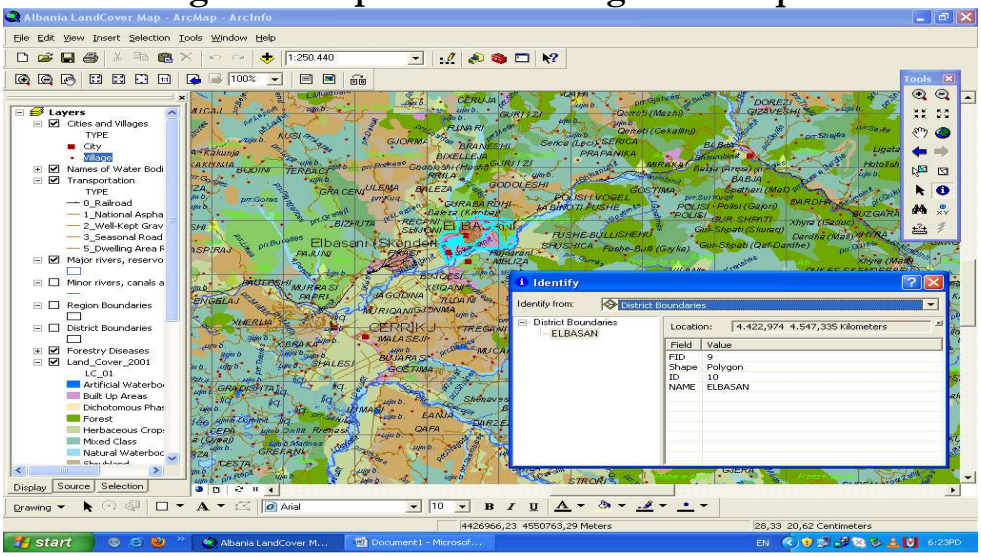
Layers and its attributes

Name of Layer	Attributes
Way	ID, Name, Type
Bus Station	ID, Name
Restaurant	ID, Name, Type of Food, Address
Public Building	ID, Name
Church	ID, Name
Public Garden	ID, Name
Hotel	ID, Name, Category, Pool, Air Condition, Car Rental, Room Service, Shower, Sightseeing, Coffee, Restaurant, Number of Room, Cable TV, Lounge, Laundry, Meeting Room, Fitness, Disco, Address, Web, Telephone, Fax
Mosque	ID, Name, image, document
Police Station	ID, Name, Telephone
Museum	ID, Name, Telephone, image
Boundary Of District	ID, Name, Area, Length

Source: Turk and Gumusay, 2004

Figure 8

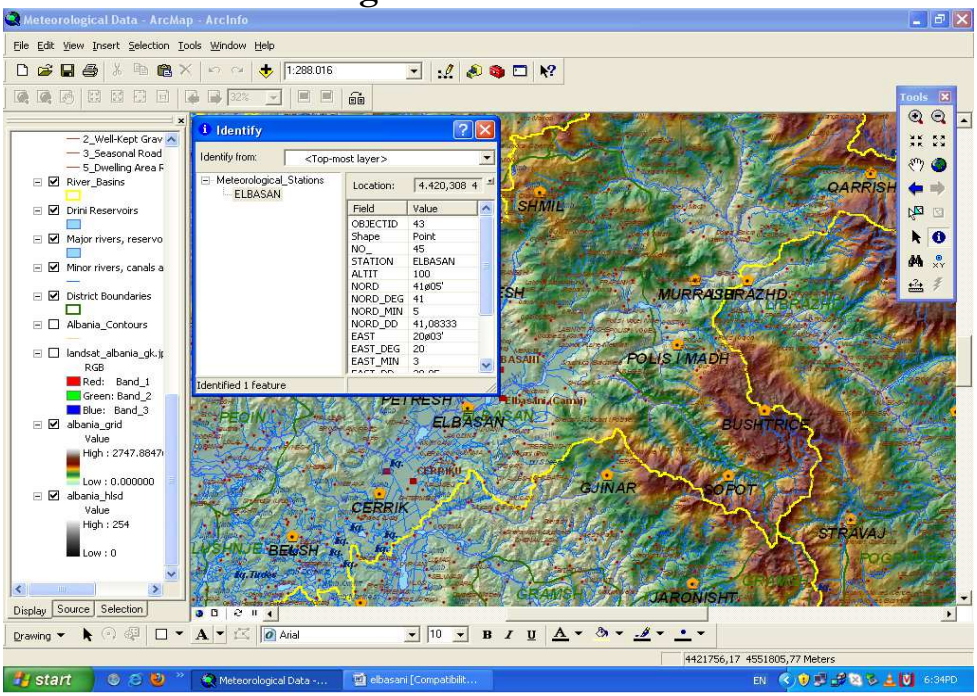
Digitised map of Elbasan Region with queries



Source: Author's application in GIS

Figure 9

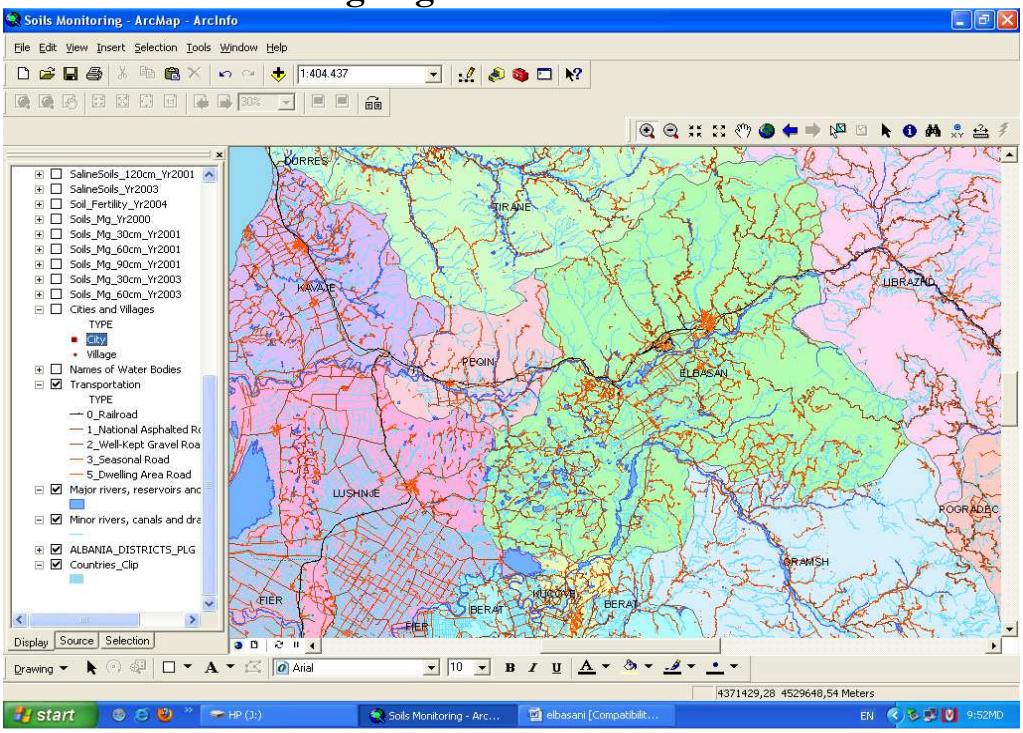
Meteorological data for Elbasan District



Source: Project for environment protection, Elbasan District

Figure 10

The monitoring of green areas for Elbasan District



Source: Project for environment protection, Elbasan District

Conclusions

This paper underlined the importance of GIS in the development of the tourism industry, with particular focus in Elbasan District. The analysis shows that the application of GIS in Elbasan certainly provides a better management and planning of the tourism industry in this region. This region has a lot of attractive tourist centres, but people from abroad have no information access. Of course, tourist centres, guides, brochures, leaflets, etc. are very important, but these are insufficient considering the main aim of the tourism industry in Elbasan District to achieve a double increase in the number of foreign tourists until 2013. Therefore, providing GIS information in Internet

gives an important contribution for the management, promotion and the development of the tourism industry in Elbasan region in general. Only in this way, tourists, different tourism agencies and all interested people would have access to real information which is always up to date. Moreover, GIS minimises the difficulties in the use of maps, graphical tourist guides etc. So, providing a perfect combination between scientific methods and practical and visual work we may declare that GIS is practically a revolution for the humanity. It helps people to save money and time, and easily find the most updated information.

However, the process of data collection and analysis of the tourism industry in Elbasan region identified the lack of information, statistics and market research. For example, it is obvious that the tourism is developing in this region, but it is impossible to find any statistics about the number of tourists and their origin. Therefore, local authorities, including Municipality, District and Prefecture or other institutions and researchers, should undertake more studies, collect more information, and analyse this sector more systematically.

Finally, the growing interest of tourists for this region in particular and Albania more generally suggests the need for more sophisticated and complex applications of GIS, making it an indispensable tool.

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