



THE EFFECT OF LAND USES LEGISLATION IN THE FUNCTIONAL STATUS OF THE GREEK URBAN TISSUE

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Abstract

The paper will focus on the way the land uses legislation has until today shaped the Greek cities functional character. It is divided in two parts. In the first part, the historical frame that shaped the Greek cities functional status is examined in an effort to realize the parameters that have influenced the functional character of the Greek cities. The period that will be examined starts in 1831 when the first decree for the development of the remains of the war gave every Greek citizen the right to own a certain piece of land where he could construct his house, with some restrictions. Through time the effort of the state was to control cities through restrictions, aiming to their development based on hygiene rules as rapid population increase was noticed. The paper will examine the basic legislative rules that have tried to control land uses until today and it will focus on their effect in the Greek urban web.

In the second part the research will evaluate the effectiveness of today's land uses legislative framework, using two case studies. The first area that will be examined is the metropolitan basin of Athens, the area that concentrates the country's population and employment majority. The second case study is Athenians municipality the core that today is the central area of the basin, the initial core that has been constantly functioning since the creation of the Greek state

The methodology that will be used includes three steps. In the initial step it will focus on the kinds and posts of land uses before the application of the plan that defined the desired land uses structure and allocation. That will be realized with the use of Principal Components Analysis on the recorded employment in urban functions and the investigation of its allocation. In the second step it will examine the intentions of planning and the result it aims to induce. Finally in the third step the same procedure with the first step will take place, but with the use of records that were selected ten years later, in order to reveal the kinds and posts of land uses after planning. The evaluation will result from the compare of the aims of planning and the shaped status after the legislative plan's application. This will show if planning was effective and the examined areas have been developed as they were planned or if finally other parameters have

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deteriorated the initial plan and finally city is shaped under the influence of other stronger incentives.

1. Introduction

After the creation of the Greek state, the efforts for the development of Greek cities were taking place with different intensity through the years. The first plans of the proposed cities initially showed the shapes of the building blocks and the posts of public uses. Through time, more kinds of uses that were allowed to be allocated in certain city's posts and progressively more restrictions were legislated. The initial intension for the regulation of public uses was replaced by the creation of rules that tried to manage the mixture of all uses. These continuous changes have led to the functional changes of the areas where they were applied. These changes and the degree of the effect of urban legislation are the subject of the current research. Because of the plethora of the many and different laws that have been legislated and concern all Greek cities the research will focus only in the laws that concern land uses as these constitute the basic factors that shape the city's functional structure.

The case studies that will be examined are the metropolitan basin of Athens, which concentrates the majority of population and employment. The research will focus on its functional structure before and after the application of its regional plan in order to evaluate its effectiveness. The second case study is the Athenians municipality. The research will evaluate if Planning took into consideration the existing functional structure of the capital's center and then it will investigate the degree of effectiveness of the existing legislative framework.

2. The land uses legislation from 1833 until today.

The creation of the New Greek state was a fact since 1831. The ruins of the war were the remains where the Greek cities had to be developed. The first effort for the new cities reconstruction took place with a decree that was signed by the first Greek Governor J. Kapodistrias. According to this decree, every Greek citizen had the right to take a piece of land (from 300-450 square meters) where he could construct his residence. The restrictions that this decree had were that the houses had to be built in one year, this property could not be sold and that the State could primarily choose the areas where the public buildings could be built.

A representative plan of the way land uses were allocated in the cities is the plan of Kleanthis and Schaubert that was designed in 1833. This plan was never applied but it is a strong example of the way Urban Planning defined the positions of public uses. It is also characteristic that planning took into consideration public buildings and high income class. The low-income class and the industries were allocated in areas close to the cities without any restriction. Two years later, a decree that was legislated and was named as "the decree for the healthy construction of cities" defined that public buildings had to be

constructed in the cities, the hospitals and the slaughterhouses out of the cities in areas where the air was clean, the industries could be constructed after they ensured police license and finally the tanneries in a half hour distance away from the cities.

- A. Palace
- B. Barracks
- C. Weapon storage
- D. Mint
- E. Academy
- F. Grant
- G Post Office
- H. Police
- I. Temple
- J. Chamber of deputies
- L. Botanic Garden
- M. Barracks
- N. Slaughterhouses



Fig. 1- The Kleantes and Shaubert plan.

Progressively most of the Greek cities were planned this way, until 1922 when 1,5 million refugees arrived in Greece. This arrival led to the need for the creation of new residence areas that were allocated on the empty fields close to the existing industries. Except from the rich refugees that chose the suburb of Nea Smirni, the rest were directed to the West industrial basin where small houses with cheap materials were constructed and the living conditions were difficult.

All this pressure led one year later to the creation of a decree that has affected decisively the Greek Urban status. As for land uses, in this decree restrictions were mentioned in four articles. The first innovation that was imported was that all areas primarily would be residential and after this condition was satisfied, all other uses would be allocated. The second innovation that was imported was that industries could not be allocated in the city's tissue, as they were until now, but they had to be away from urban areas.

The decree that changed the way land uses were allocated in Greece was legislated 56 years after 1923. In articles 3 and 4 of the 1979 decree, two categories of land uses are

defined, the general uses and the particular uses. The innovation of this decree was that it imported categories of land uses, attempting to create multi-functional areas.

Only one year later (1980) a new decree for land uses was legislated. It was innovated as it tried to connect the land uses with the building restrictions. It defined eleven categories of land uses, it separated the industrial uses from residence and the rest urban functions and it defined for the first time two categories of residence, the Unmixed residence and the General residence. The Unmixed residence aimed to the creation of areas where strictly residence was allowed with some small supplementary uses, as small shops. On the contrary, the General residence was a category that included residence, shops, hotels, restaurants, education and cultural uses and other functions. Two years later, in 1983 a new decree tried to “manage” the Greek cities. It was the time the “Enterprise of Urban Reconstruction” was founded and it focused in the creation of Greek cities with standards, trying to provide the necessary infrastructures for the Urban tissue.

Although this decree did not have specific rules for land uses, the majority of plans that were created after its legislation were based on categories as urban centers, residence, industry, education, disconnecting land uses from building restrictions.

The fact that no certain decree for land uses existed, led four years later, in the legislation of a decree that until today constitutes the base for urban planning. The decree of 1987 defined nine categories of land uses and its main objective was the mixture of land uses. It is characteristic that land uses participate in many categories. It is also interesting that residence exists in seven of the total nine categories.

Although many laws have since then been legislated regarding urban planning it is remarkable that a new land uses decree has yet not been legislated, but Planning is still based on a decree that was legislated 24 years ago. The explanation that can be formulated is that this decree is successful so it does not have to be changed. But is the existing decree for land uses of Greece successful? For the evaluation of the decree's effectiveness, the current paper will focus on the way land uses are allocated after the application of the existing land uses legislation examining two case studies of its application in the most complicated areas of the Greek urban tissue.

3. Methodology

The main aim of the research is to examine the form and the composition of land uses groupings. The land uses groupings will be revealed with the use of Principal Components Analysis. This statistical technique reveals the structures of the variables that are inserted in the Analysis, which in our case are land uses, measured by their recorded employment (Dixon, 1983). These Analyses reveal the functional structure of the examined area expressed by the extracted Components. These Components are structured by the best linear relationship of the land uses. That is to say, which land uses

are areally related. Finally, the Components are rotated in Varimax rotation, which allows the best thematic and areal correlation of land uses (Brannen,1989).

4. The Athenians basin.

The concentration of the population's majority in Athens the capital of Greece with different intensity that varied according to political, social and economic conditions with the simultaneous lack of Planning led to a laissez-faire in land uses allocation. Although many plans were created, after the second world, it was 1985 when for the first time a regional plan for the Athenians basin was legislated. Its main aim was to encourage a multi-centric development in order to decongest the central overpopulated center. The question that arises is if this aim was achieved or if the freedom that was provided allowed a different status in land uses allocation.

4.1. The Athenians basin in 1978.

In 1978 the Athenians basin was a pole of new residents attraction, with industrial zones developing in its around while the tertiary activities were developing in its central core. The employment that was recorded was 619.664 people. The majority of employees were concentrated in the tertiary sector (57%) while the industrial and manufacture activities gathered the 43% of the recorded employment. This time as told, in the Athens basin existed nor regional neither urban planning, in order to define the detailed allocation of the 37-different kinds of land uses. So, the main parameter that influenced land uses allocation was the coverage of the basin's citizen's everyday life needs that ensured the best activity's function, hence it's maximum profit. The extracted functional structure, from the Principal Component Analysis, in 1978 is composed by five components that explain the 24,5% of the total variance of the existing employment situation (Table 2). The first group of land uses (composed by 12 of the 14 tertiary activities) defines Urban Centers while the rest four groupings are formed exclusively by the remaining 23 industrial uses.

The study of the central uses allocation (Fig. 3) shows that they are concentrated on the Athens center and they have also shaped five (5) sub-centers distributed in areas that cover the wider region's needs. The industrial uses are all (and the four components) allocated with common principles. They are concentrated in the central area due to the lack of planning restrictions and also distributed in the total of the basin, with intense condensation in the west traditionally industrial area (Fig.4).

It has revealed that although restrictions regarding land uses did not exist, the activities themselves seeking to take advantage of the profits that can be ensured by certain areas position have shaped cores where activities are concentrated. It has also revealed that industrial uses have shaped groups as they need areas with common characteristics that

means low land prices and adjacency with main axes and in some cases they function on an assembly line.

Table 2. The Land Uses Groupings in 1978

Component	Economic activity	
CENTRAL DAILY NEEDS LAND USES	Retail Trade	
	Wholesale Trade	
	Transactions of Affairs	
	Brokers and representatives	
	Insurances	
	Clothing and footwear Industries	
	Restaurants and Hotels	
	Rest Industries	
	Personal Services	
	Banks and rest Economic Institutions	
	Printing, Publications and relevant activities	
	Services of Recreation and Culture	
	Medical and Sanitary Services	
	INDUSTRIAL USES	Industries of products from tyre and plastic material
		Textile Industries
Industries of not metal mining products		
Industries of Furniture and goods of furnishing		
Industries of Timber and Cork		
Industry of Food except drinks		
Chemical industries		
Basic Metallurgic Industries		
Wholesale trade of Litter and Clippings		
Manufacture of machines and appliances		
Manufacture of electric machines, appliances and remaining tyres		
Tobacco industries		
Industries of Oil and Mine products		
Mobile Renting		
Paper Industries		
Transports		
Leather and furs Industries		
Manufacture of Carrier means		
Storages		
Drinks Industries		
Manufacture of metallic products		
Communications		
Services of Hygiene and Cemeteries		

4.2. The Regional plan of 1985.

The congestion of the Athenians center and the intense air pollution led in 1985 in the legislation of the first regional plan for the Athenians basin. Its basic aim was the development of sub-centers in order to achieve multi-centric development. The regional plan was followed by local plans for each of the 54 municipalities that were based on sub-centers development. The new legislated centers hierarchy and their allocation in the Athenians basin is shown in Figure 5. In these areas the land uses that were allowed to be allocated were central uses that is to say trade, offices and other tertiary activities as well as residence.

4.3. The Athenians basin in 2001.

Since 1978 the basin's population and employment was continuously increasing and from the middle of the 90's it is stabilising with a very small reduction. Meanwhile, planning has discouraged the manufactures that pollute the environment but it has also allowed land uses mixture. The majority of employment is recorded in tertiary sector while the employees in manufacture are reduced.

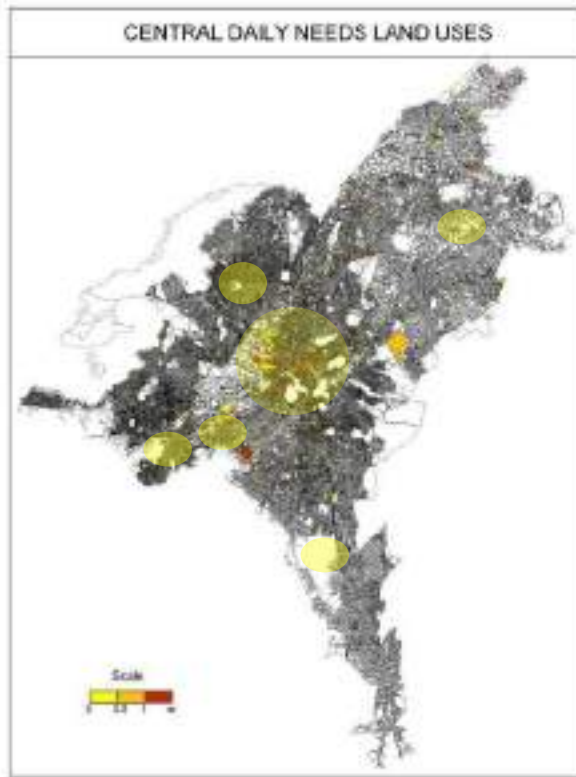


Fig. 3 The allocation of Central daily needs land uses

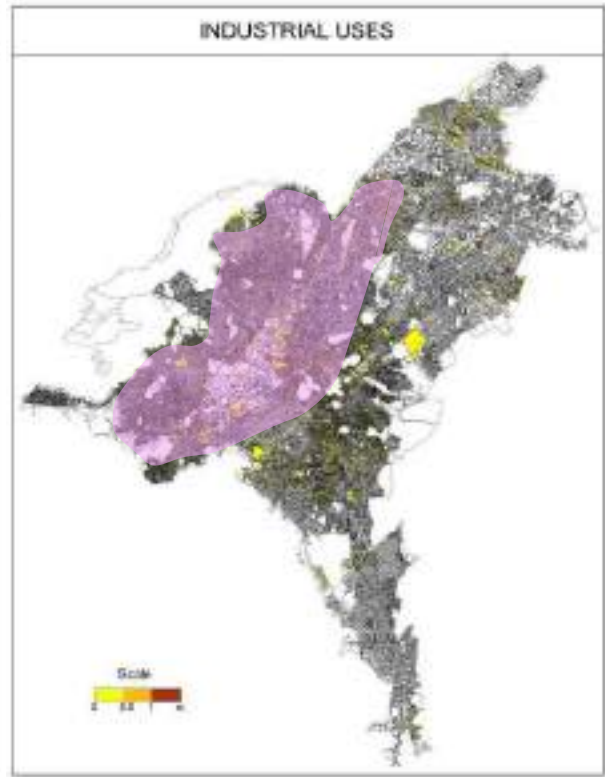


Fig.4 The allocation of industrial uses



Fig.5 The allocation of central activities according to the 1985 regional plan.

The examination of the activities structures that have been created according to the 2001 census, shows that five groupings of land uses are revealed (Table 6). The first grouping concentrates the majority of activities. It is composed by manufacture, constructions, trade, hotels and other incompatible activities. Some of its elements are functionally related while others seem to take advantage of each area's characteristics. The second grouping includes central business district functions as it is composed by supralocal activities that require accessibility (Bourne,1972) . The third and the fourth groupings are composed by manufacture activities that are functionally related and "prefer" areas with low land prices. Finally it is characteristic that the fifth grouping includes only transport activities, fact that shows that some activities create specialized structures.

Table 6. The Land Uses Groupings in 2001.

Component	Economic activity
Constructions, trade and services	Constructions
	Clothing manufacture
	Hotels and restaurants
	Retail trade
	Manufacture of metallic products
	Furniture manufacture
	Recreation, cultural and athletic activities
	Travel agencies
	Food manufacture
	Publications
	Transport
	Administration and social services
	Other services.
	Textile manufacture
	Trade
	Plastic equipment manufacture
	Timber manufacture
	Paper production
	Basic metals production
	Leather production
Organisations	
Central business district	Finance organisation
	Education
	Health
	Information technology and relevant activities.
	Post offices and telecommunications
	Insurances
	Air transports.
	Chemical goods production
Rentings and manufactures.	Equipment renting
	Tobacco production
	Oil and fuel Production
	Vehicles trade
	Research
	Computer production
	Real estate
Manufactures of engines	Production of engines
	Medical tools production
	Electric engines production
	Manufacture of equipment
	Cars production
Transports	Water transport
	Manufacture of of transports equipment.

The areal distribution of the five groupings is shown in Figures 7-11. The first grouping appears with intense condensation in the central area of the basin where intense residence is also recorded in 2001 and it is less intense in more distant from the center areas (Fig. 7). The second, central businesses district grouping is concentrated on main road axes that “begin” from the center of the basin and cross it towards all directions except the east industrial area (Fig. 8). Finally, the three rest groupings are almost uniformly distributed in the basin’s area. The fact that the central activities, as trade services and offices, are concentrated in the center shows that the aim of multi-centric development has not been achieved while the fact that the rest groupings are uniformly distributed is a sign of satisfactory service in local level. So the fact that groups of incompatible activities are concentrated in the basin’s center is evaluated negatively as functions as manufactures of plastic and timber overload the environmentally congested central area.

Figure 7. The allocation of trade constructions and services.

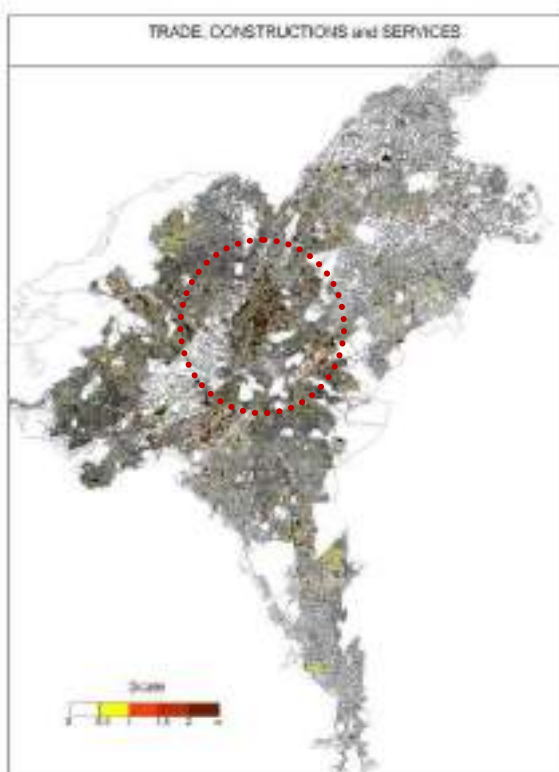
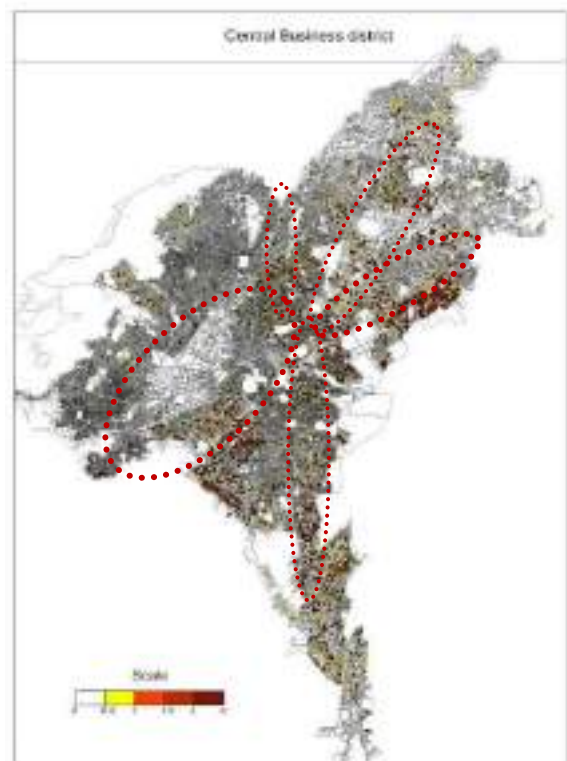


Figure 8. The allocation of central business district



In 2001, the majority of the recorded cases shows that tertiary and manufacture activities are more intensively mixed. Therefore, the thematic mixture of land uses remains random in the majority of the recorded cases. In the north south and east basin in 2001

the new mixed uses groupings are scattered in all areas where intense central functions groups are also allocated. It seems that the activities of this grouping, that are mixed in a random way, are allocated with the criterion of the maximum coverage of the until then not satisfactory served areas. Therefore, new enterprises of all kinds avoid the congested center and prefer areas that had not until then developed functional centers but had increasing population.

Figure 9. The allocation of Rentings and manufacture



Figure 10. The allocation of Manufactures of engines



Figure 11. The allocation of Transports



So, autonomous areas have started to develop, concentrating all kinds of functions. This auto-regulation that is not exactly following the legislated plans, that tend to sub-centers creation, show that traffic minimization has up to a point been achieved, while autonomously functioning sectors are created with a big degree of randomness. It is concluded that a thematic and areal balance has not yet been achieved. This phenomenon is related to the constant employment and population increase of many areas assisted by the freedom that is provided by the existing legislative framework.

5. The Athenians municipality.

The Athenians municipality constitutes the most populated municipality of Greece, as it concentrates 313.177 residents. The first Urban plan for the municipality was created in 1989 and it was modified two times in order to adjust to small local level changes. Its recorded employment has decreased in all sectors more intensively in manufacture and industries.

5.1. The functional structure of the Athenians municipality in 1988.

The execution of Principal Components Analysis in the 1988 recorded employment has revealed 15 kin land uses groupings, that can be grouped in four categories: the Urban centers (4 components), the manufacture uses (5 components), the industrial uses (4 components), and the incompatible uses (2 components). The last group includes uses that should not co-exist (schools and industries) but they are recorded in the same areas taking into advantage the lack of restrictions. The revealed components are shown in Table 12. It is realized that although there was not any legislative restriction to define the kind and the position of land uses, they have created groups that optimize their function. The allocation of the four groupings categories is shown in Figure 13.

The industrial and manufacture uses are allocated in the municipality's center and in its west areas while urban centers are allocated not only in the central area but also on main road axes sides. Finally, the incompatible uses groupings are allocated in residential areas.

Table 12 The functional structure of the Athenians municipality of 1988.

Components	Economic activities	Loadings
Manufacture uses	Leather and furs Industries	0,802
	Clothing and footwear Industries	0,769
	Rest Industries	0,618
	Wholesale Trade	0,539
Urban Centers	Banks and rest Economic Institutions	0,670
	Brokers and representatives	0,588
	Retail Trade	0,522
	Transactions of Affairs	0,460
Incompatible grouping	Industries of Oil and Mine products	0,595
	Insurances	0,837
Manufacture uses	Industries of products from tyre and plastic material	0,746
	Industries of Furniture and goods of furnishing	0,627
	Industries of Timber and Cork	0,583
Manufacture uses	Tobacco industries	0,824
	Printing, Publications and relevant activities	0,783
Urban Centers	Education	0,760
	Services of Recreation and Culture	0,618
Industrial uses	Chemical industries	0,804
	Textile Industries	0,794
Industrial uses	Basic Metallurgic Industries	0,684
	Manufacture of metallic products	0,600
	Manufacture of electric machines, appliances and	0,425
Industrial uses	Industries of not metal mining products	0,615
	Manufacture of machines and appliances	0,615
Manufacture uses	Storages	0,830
	Wholesale trade of Litter and Clippings	0,446
Industrial uses	Paper Industries	0,762
	Manufacture of Carrier means	0,706
Incompatible grouping	Restaurants and Hotels	0,595
	Transports	0,535
	Personal Services	0,485
Urban Centers	Communications	0,744
	Social Security	0,722
Manufacture uses	Drinks Industries	0,769
	Industry of Food except drinks	0,550
Urban Centers	Mobile Renting	0,726

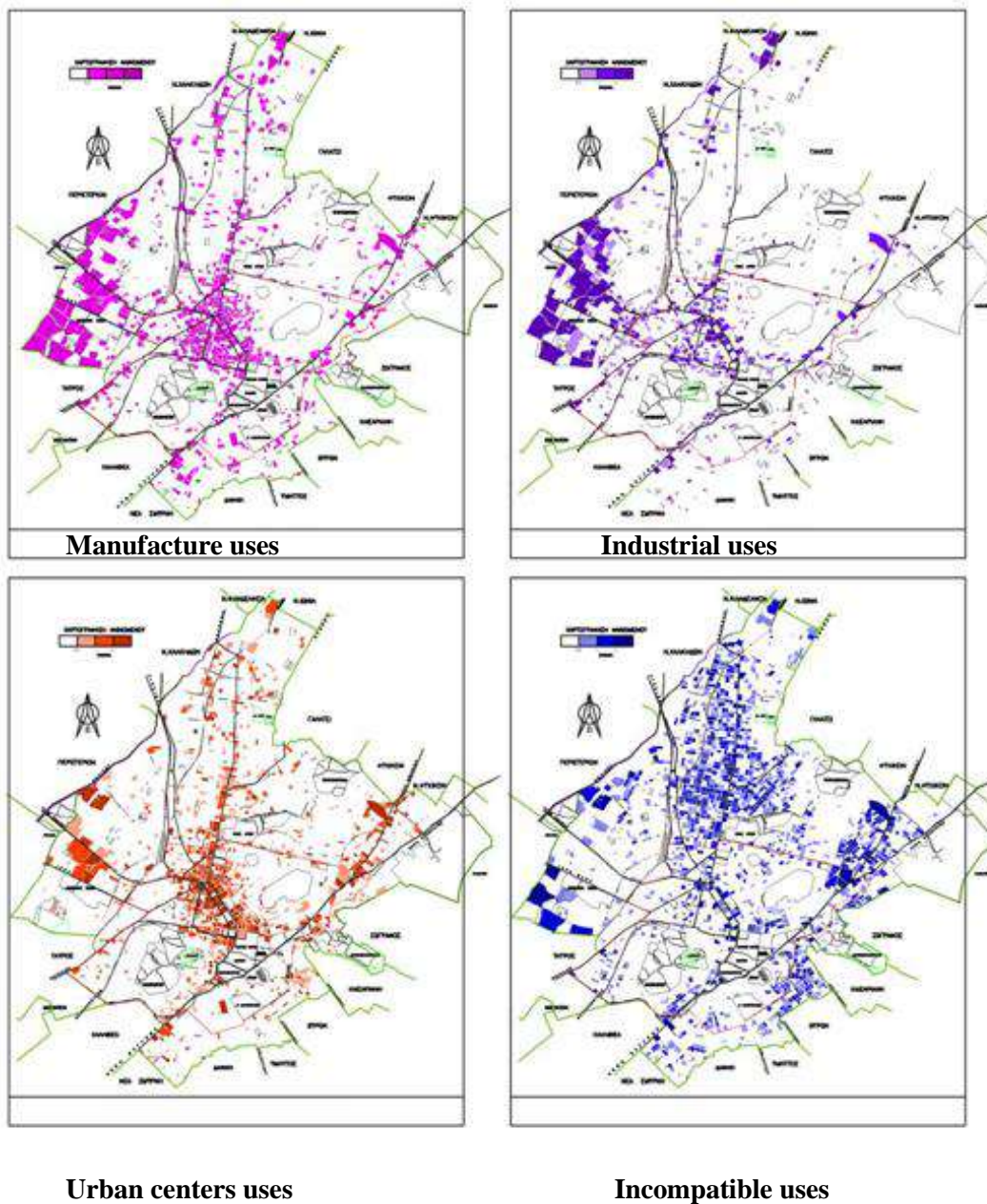
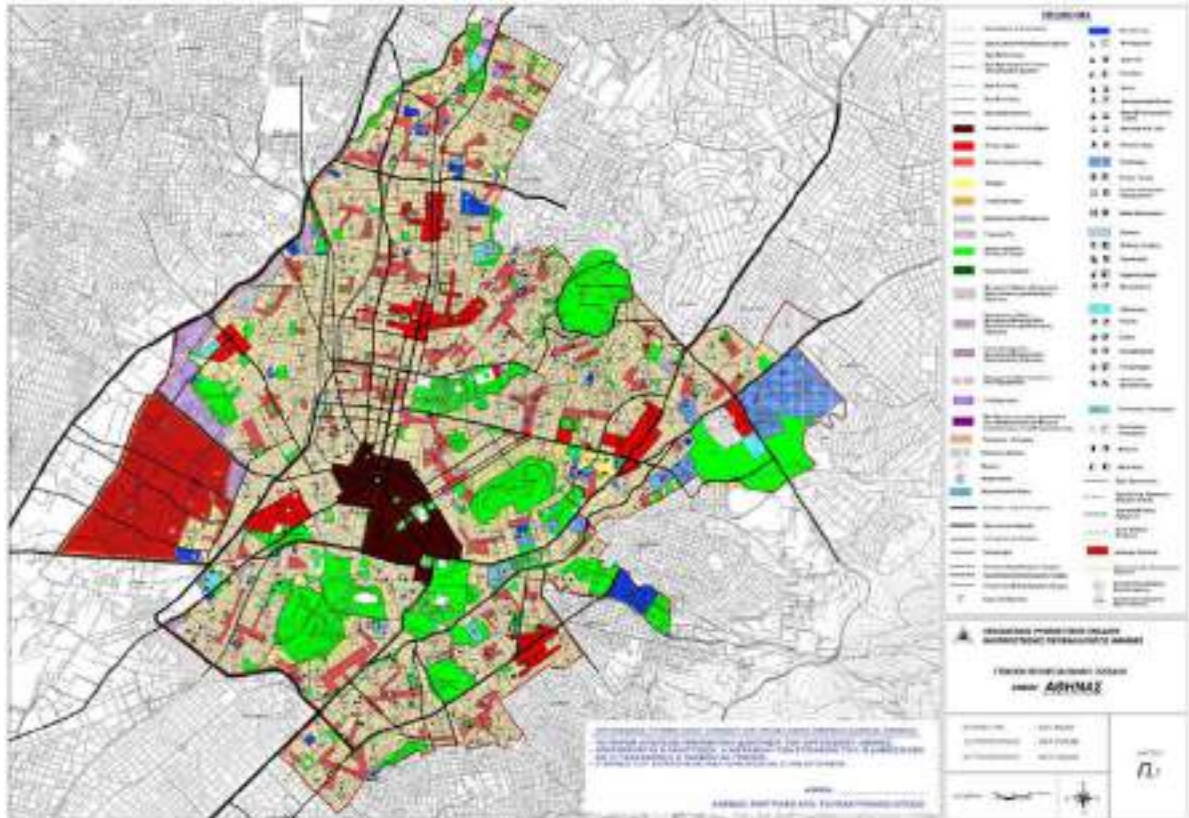


Figure 13. The allocation of the functional structure's components in the Athenians municipality in 1988.

5.2. The Athenians municipality urban plan.

The priority of this plan that was legislated in 1989 was the reveal of the municipality as a metropolitan center with the simultaneous removal of all the uses that degraded the

area. The kinds and posts of the allowed uses are shown in figure 14. It encouraged land uses mixture but it limited the incompatible uses, as the allowed uses were all compatible.



Urban centers Mixed areas Green areas Industrial areas Health and education

Figure 14. The Urban Plan of the Athenians municipality.

It is obvious that manufacture areas were delimited in specific city's parts while the center concentrated the supra-local central activities. It is also realized that a multi-centric development was proposed as urban sub-centers are legislated in many city's parts.

5.3. The functional structure of the Athenians municipality in 2001.

The execution of Principal Components Analysis in the 2001-recorded employment revealed nine land uses groupings that are grouped only in three categories as incompatible land uses groupings don't exist. It is shown that since 1988 urban centers

have been created and are divided in three different groups, while manufacture and industrial groupings are reduced (Table 15).

Table. 15 The functional structure of the Athenians municipality of 2001.

Components	Economic activities	Loadings
Urban Centers	Education	0,75
	Other services.	0,73
	Health	0,67
	Recreation, cultural and athletic activities	0,64
	Hotels and restaurants	0,57
	Publications	0,56
	Information technology and relevant activities.	0,54
	Retail trade	0,52
	Post offices and telecommunications	0,49
	Insurances	0,44
	Research	0,41
	Air transports.	0,33
	Chemical goods production	0,32
Industrial uses	Water transport	0,71
	Constructions	0,65
	Textile manufacture	0,58
	Manufacture of metallic products	0,56
	Land transports	0,51
	Clothing manufacture	0,44
	Furniture manufacture	0,43
	Food manufacture	0,42
	Manufacture of equipment	0,40
	Electric engines production	0,39
	Timber manufacture	0,35
	Plastic equipment manufacture	0,34
	Industrial uses	Oil and fuel Production
Urban Centers	Paper production	39,00
	Real estate	0,66
Urban Centers	Finance organisation	0,30
	Medical tools production	0,60
Manufacture uses	Manufacture of of transports equipment.	0,34
	Organisations	0,86
Urban Centers	Administration and social services	0,55
	Tobacco production	0,54
Manufacture uses	Leather production	0,36
	Production of engines	0,65
Industrial uses	Vehicles trade	0,51
	Engines production	0,78

The above groupings allocation is shown in Figure 16. It is obvious that the manufacture and industrial activities have moved from the municipality's center, while central activities are allocated there in a nucleus form.

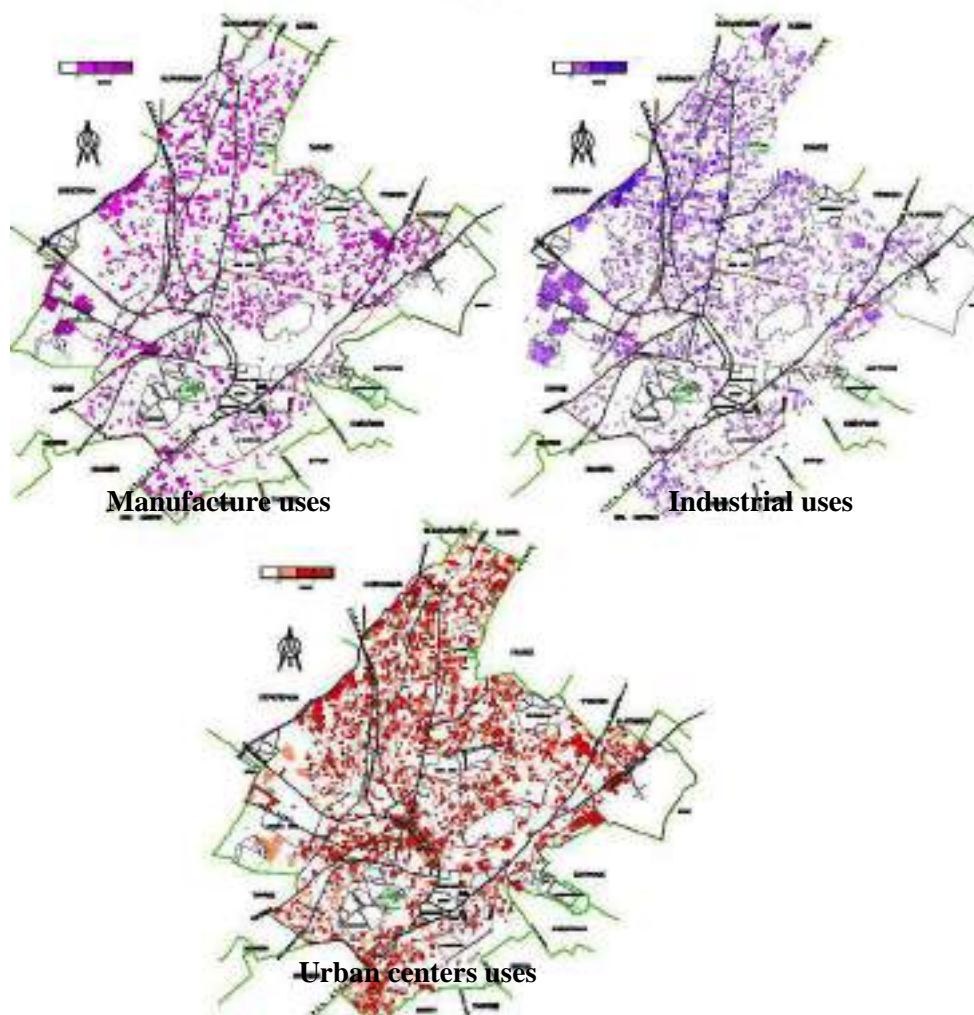


Figure 16. The allocation of the components of the functional structure in the Athenians municipality in 2001.

Therefore, it is concluded that in the case of the Athenians municipality, Planning that took into consideration the existing functional status did not succeed to shape a new functional character in the municipality. The new groupings that have been shaped are composed by functionally relevant activities that are up to a point allocated in the proposed by Planning posts. New sub centers have been created while incompatible functions co-existence does not exist. But it has failed to result its initial aim as still manufacture and industrial uses are recorded in scattered form in areas where residence and its supplementary uses that is to say manufacture with no further specification are allowed. The fact that the land uses decree provides a freedom in the allowed categories shows that land values and market forces can shape their own functional status.

It results that Urban Planning must focus on the particularities the cities have and the parameters that shape city's development and propose specialized solutions in order to achieve the best urban function that will lead to the city's citizen's best living conditions.

6. Conclusions

The aim of the current research was the investigation of the effectiveness of the existing land uses decree of Greece. The two case studies that have been examined are the most complicated functionally areas of the Greek urban tissue so they constituted the proper areas for the aim of the research.

It is concluded that in the Athenians basin as well as in the Athenians municipality land uses structures and allocation have up to a point been achieved according to the existing corresponding regional and urban plan. It is obvious that urban planning does not seek for zones of certain activities and that land uses have to be mixed in order to create livable cities. However, when this mixture is thoughtless and market forces create structures based on the highest possible profit then it is concluded that restrictions should be imposed. Legislation has up to a point influenced this development as it has some restrictions especially in the allocation of industrial uses but it also provides freedom for the rest land uses to be allocated in the majority of urban web. Therefore, it is obvious that Urban Planning must focus on the particularities the cities have and the parameters that shape their development and propose specialized solutions in order to achieve the best urban function that will lead to the city's citizens best living conditions.

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