reviewed paper

URBAN PLANNING versus REAL ESTATE DEVELOPMENT in Attica

Ioannis TSOUDEROS, Despoina DIMELLI

Dr. Ioannis TSOUDEROS, Eng. Despoina DIMELLI , N.T.U.Athens. Greece. N.T.U.Athens,
E-mail: itsou@mail.ntua.gr / ddime@tee.gr

ABSTRACT

The city of Athens, economic, political and administrative capital of Greece since 1833, has been developed upon ancient settlements of 2000 years and more without regulating planning and principles. The distribution of economic activities in urban tissue has been determined by a "laiser faire", under the influence of continuous political pressures. Market, with successive changes, has formed a functional "situation of balance", in the thematic level as well as in their areal distribution.

This has led to an Urban Status where Land Uses configure Land Prices and vice versa. New areas with Functional Structures have been developed, that determine land prices forced by Market needs.

For this reason, Athens constitutes a suitable territory for research of urban activities distribution as it is shaped without regulation but it is formed by the free offer and demand of space for the installation of urban activities.

This allocation is fixed from

a) their "functional requirements"

b) their essential "environmental compatibilities" and mainly,

c) their "land prices".

Our research aims to show

- initially how Greek legislation has taken into consideration the city's existing Functional structure and then
- how the "allocation freedom" that is provided, shapes the Urban web of Athens municipality and accordingly real estate development.

1 THE FUNCTIONAL STRUCTURE REVEAL

The Urban Activities are allocated in urban space in a way that would serve their co-function in the city. The functional picture of the city is determined by 38 economic activities. City's Functional Structure will be revealed via the existing linear correlations of the medium annual employment in economic activities. The presence of economic activities is recorded in 6.024 Building Squares of the Athenians municipality. Functional Structure will be revealed by a Principal Components Analysis on the previous described matrix. The structure is concreted by 15 Components which consist thematic groups of Economic activities, shown in Table 1. It is obvious that the 15 components, revealed by the Principal Components Analysis are composed by activities that co-function in urban space.

2 THE ENACTMENT OF LAND USES ALLOCATION IN RELATION WITH THE EXISTING FUNCTIONAL STRUCTURE.

The planning legislation in Greece is determined by two basic tools.

A)The Presidential Decree of 1985 that determines 8 main categories of land uses that can co-exist in Urban areas, and

B)"Urban Plans" that are legislated for specific areas and determine the previous Decree's categories of land uses, allocation in these areas.

The 3 main categories of land uses that are composed by economic activities are the following:

a) Urban Centers - where residence, hotels, hostels and rest tourist settlements, commercial shops, offices, banks, insurances, public institutions, administration buildings (in the neighborhood centers only administration buildings of neighborhood level are allowed), restaurants, refreshment stands, amusement centers, assemblage public domains, cultural buildings, education buildings, religious domains, social

security buildings, low harmful effect professional laboratories, parking, petrol service stations, athletic and commercial reports domains and medium mass transports domains, are allowed.

b) No Environmentally harmful industry – manufacture - This category includes low and medium harmful effect industries - manufacture that can co-exist with residence.

c) Environmentally Harmful industry – manufacture - This category includes industries - manufacture that cannot co-exist with residence, because of the noise and the environmental pollution they cause.

The fact that until 1989 an "Urban Plan" for Athenians municipality has not been legislated has led to the free allocation of economic activities without broad Urban Planning criteria. This has led to the frequent readjustment of urban functions allocation in a continuously reshaped urban tissue.

In order to achieve the comparability between the enacted groups of economic activities from "Urban Plans" with the Functional Structure Components that resulted from P.C.A. [15] that was mentioned before, we group the Components according to the content of Land Uses Presidential Decree. These groupings are shown in Table 2:

1988 Census

1988 FUNCTIONAL STRUCTURE

Functional Structure Components		Economic Activities	NSSG Codes	Loadings	Eigenvalues	%Variance
1	Personal Products distribution	Leather and furs Industries	d29	0,802	3,63	9,32
		Clothing and footwear Industries	d24	0,769		
		Rest Industries	d39	0,618		
		Wholesale Trade	d61	0,539		
2	Commercial Centers	Banks and rest Economic Institutions	**d81**	**0,670**	**2,04**	**5,24**
		Brokers and representatives	**d63**	**0,588**		
		Retail Trade	**d64**	**0,522**		
		Retail Trade	**d65**	**0,468**		
		Transactions of Affairs	**d83**	**0,460**		
3	Oil Industries	**Industries of Oil and Mine products**	d32	0,837	1,77	4,55
		Insurances	d82	0,595		
4	Equipment Industries	**Industries of products from tyre and plastic material**	**d30**	**0,746**	**1,43**	**3,68**
		Industries of Furniture and goods of furnishing	**d26**	**0,627**		
		Industries of Timber and Cork	**d25**	**0,583**		
5	Permanent Products Industries	Tobacco industries	d22	0,824	1,33	3,42
		Printing, Publications and relevant activities	d28	0,783		
6	Education and Recreation	**Education**	**d93**	**0,760**	**1,28**	**3,3**
		Services of Recreation and Culture	**d97**	**0,618**		
7	Chemical And Textile Industries	**Chemical industries**	d31	0,804	1,19	3,05
		Textile Industries	d23	0,794		
8	Building Materials Production	**Basic Metallurgic Industries**	**d34**	**0,684**	**1,14**	**2,93**
		Industries of not metal mining products	**d33**	**0,600**		
		Manufacture of electric machines, appliances and remaining tyres	**d37**	**0,425**		
9	City's Mechanic Department Services	Manufacture of metallic products	d35	0,615	1,12	2,88
		Manufacture of machines and appliances	d36	0,615		
10	Paper and Carrier Means Production	Paper Industries	d27	0,762	1,08	2,78
		Manufacture of Carrier means	d38	0,706		
11	Services and Transports	**Restaurants and Hotels**	**d66**	**0,595**	**1,06**	**2,73**
		Transports	**d71**	**0,535**		
		Personal Services	**d98**	**0,485**		
12	Hygiene Services	Services of Hygiene and Cemeteries	d92	0,871	1,04	2,69
13	Communication and Social Security	**Communications**	**d73**	**0,744**	**1,03**	**2,66**
		Social Security	**d96**	**0,722**		
14	Food Industries	Drinks Industries	d21	0,769	1,02	2,63
		Industry of Food except drinks	d20	0,550		
15	Rentings	**Renting**	**d85**	**0,726**	**1,00,**	**2,57**
		Mobile Renting	**d84**	**0,632**		

Extraction Method: Principal Component Analysis. a Rotation Method: Varimax with Kaiser Normalization.
a. Rotation converged in 11 iterations.

Table 1

These Components composition, based on the proposed groupings of Land Uses Decree is realized in order to investigate if causal relations exist between the city's existing shaped structure with the present Land Values.

We realize that the Greek legislation without taking into consideration the already formed Functional Structure maintains, in a vaguely way, the real Functional structure, as it has been revealed from P.C.A., the

[15] P.C.A.-Principal Components Analysis.

conformation of which, ensures the best function of their synthetic activities, as well as city's total function.

1988 Census

1988 FUNCTIONAL STRUCTURE

Notions of Economic Activities based on the 88 decree		Functional Structure Components		Economic Activities	NSSG Codes	Loadings	Eigenvalues	%Variance
1	Functional Centers	2	Commercial Centers	Banks and rest Economic Institutions	d81	0,670	2,04	5,24
				Brokers and representatives	d63	0,588		
				Retail Trade	d64	0,522		
				Retail Trade	d65	0,468		
				Transactions of Affairs	d83	0,460		
		16	Rentings	**Renting**	d85	0,726	1,00,	2,57
				Mobile Renting	d84	0,632		
		12	Services and Transports	**Restaurants and Hotels**	d66	0,595	1,06	2,73
				Transports	d71	0,535		
				Personal Services	d98	0,485		
		6	Education and Recreation	**Education**	d93	0,760	1,28	3,3
				Services of Recreation and Culture	d97	0,618		
		13	Hygiene Services	Services of Hygiene and Cemeteries	d92	0,871	1,04	2,69
		14	Communication and Social Security	**Communications**	d73	0,744	1,03	2,66
				Social Security	d96	0,722		
2	Not environmentally harmful industry	1	Personal Products distribution	Leather and furs Industries	d29	0,802	3,63	9,32
				Clothing and footwear Industries	d24	0,769		
				Rest Industries	d39	0,618		
				Wholesale Trade	d61	0,539		
		5	Permanent Products Industries	Tobacco industries	d22	0,824	1,33	3,42
				Printing, Publications and relevant activities	d28	0,783		
		15	Food Industries	Drinks Industries	d21	0,769	1,02	2,63
				Industry of Food except drinks	d20	0,550		
3	Environmentally harmful industry	3	Oil Industries	**Industries of Oil and Mine products**	d32	0,837	1,77	4,55
				Insurances	d82	0,595		
		4	Equipment Industries	**Industries of products from tyre and plastic material**	d30	0,746	1,43	3,68
				Industries of Furniture and goods of furnishing	d26	0,627		
				Industries of Timber and Cork	d25	0,583		
		7	Chemical And Textile Industries	**Chemical industries**	d31	0,804	1,19	3,05
				Textile Industries	d23	0,794		
		8	Building Materials Production	**Basic Metallurgic Industries**	d34	0,684	1,14	2,93
				Industries of not metal mining products	d33	0,600		
				Manufacture of electric machines, appliances and remaining tyres	d37	0,425		
		9	City's Mechanic Department Services	Manufacture of metallic products	d35	0,615	1,12	2,88
				Manufacture of machines and appliances	d36	0,615		
		11	Paper and Carrier Means Production	Paper Industries	d27	0,762	1,08	2,78
				Manufacture of Carrier means	d38	0,706		

Extraction Method: Principal Component Analysis. □ Rotation Method: Varimax with Kaiser Normalization.

a. Rotation converged in 11 iterations.

Table 2

The composition of Functional Structure components, grouped according the 1985 Land Uses decree[16], are allocated in Athenians municipality body as shown below:

Urban Centers are allocated with

- zoning layout in the municipality's centre,
- axially in the beginning parts of central road axes, from municipality's centre, that lead to suburbs with intense to the corresponding activities employment, and
- oil drops form (showing the tendency of centres creation) in municipality's total area (map 1).

Not environmentally harmful industries, are allocated with

- zoning layout in the municipality's centre, and its Eastern department in the borders with municipalities, in which intense employment in manufacturing activities are recorded (map 2).

Environmentally harmful industries are allocated with

- zoning layout in the western department of municipality's central commercial triangle,
- axially in the beginning parts of central road axes, from municipality's centre, that lead to suburbs with intense to the corresponding activities employment, and
- zoning layout in the Eastern department in the borders with municipalities in which intense employment in the manufacturing activities is recorded (map 3).

[16] of 1988

3 THE RELATION OF ACTIVITIES AREAL POSTS WITH MUNICIPALITY'S LAND VALUES.

For the ascertainment of land values effect in city's Functional Structure, that is to say in the relative posts of economic activities groups allocation, the objective land values will be used as they were determined by the Ministry of Finance in1985.

The land values[17] mapping is based on the more characteristic prices, that are determined more analytically as follows:

1. From 60-90 Euro per square metre.
2. From 90-120 Euro per square metre.
3. From 120-180 Euro per square metre.
4. From 180-240 Euro per square metre.

The lower prices, have been recorded in the northerner, western and southern department of the municipality, while the higher prices have been recorded in its Eastern department and in city's centre.

From the study of land uses areal posts that were calculated in 1988, concerning the already determined land values, we realise that:

A) Urban Centres in which activities that require central position and accessibility for their better possible function, are included. They are allocated in the Athenians municipality with the criterion of "best possible place" and no concerning land values, such as condensations are recorded in regions with wide spectrum of prices differentiation (from 60- until 240 Euros per square metre).

B) Not environmentally harmful industries, are allocated for the most part in the regions with lower land values (60-90 Euro per square metre), but also with scattered form in the "more expensive regions" (180 until 240 Euros per square metre). This fact that proves that these activities are allocated in plots that are selected with other criteria beyond those of land values..

Relative research has ascertained that the choice of any economic activity allocation, is many times based on the existence of ground owner for his own use.

C) Environmentally harmful industries are allocated in the same way as Urban Centres, thus they present intense condensation in the "cheap" western municipality's department (from 60 until 90 Euros per square metre), but also in the central[18] and western[19] department where land values are high (120-240 Euro per square metre). The possibility of choosing such a wide scale of allocation on areas with so different land values, shows that even Environmentally harmful industries are allocated with beyond strict land values criteria, since as it is obvious, the Functional facility contributes in profits increase, despite the bigger initial settlement cost.

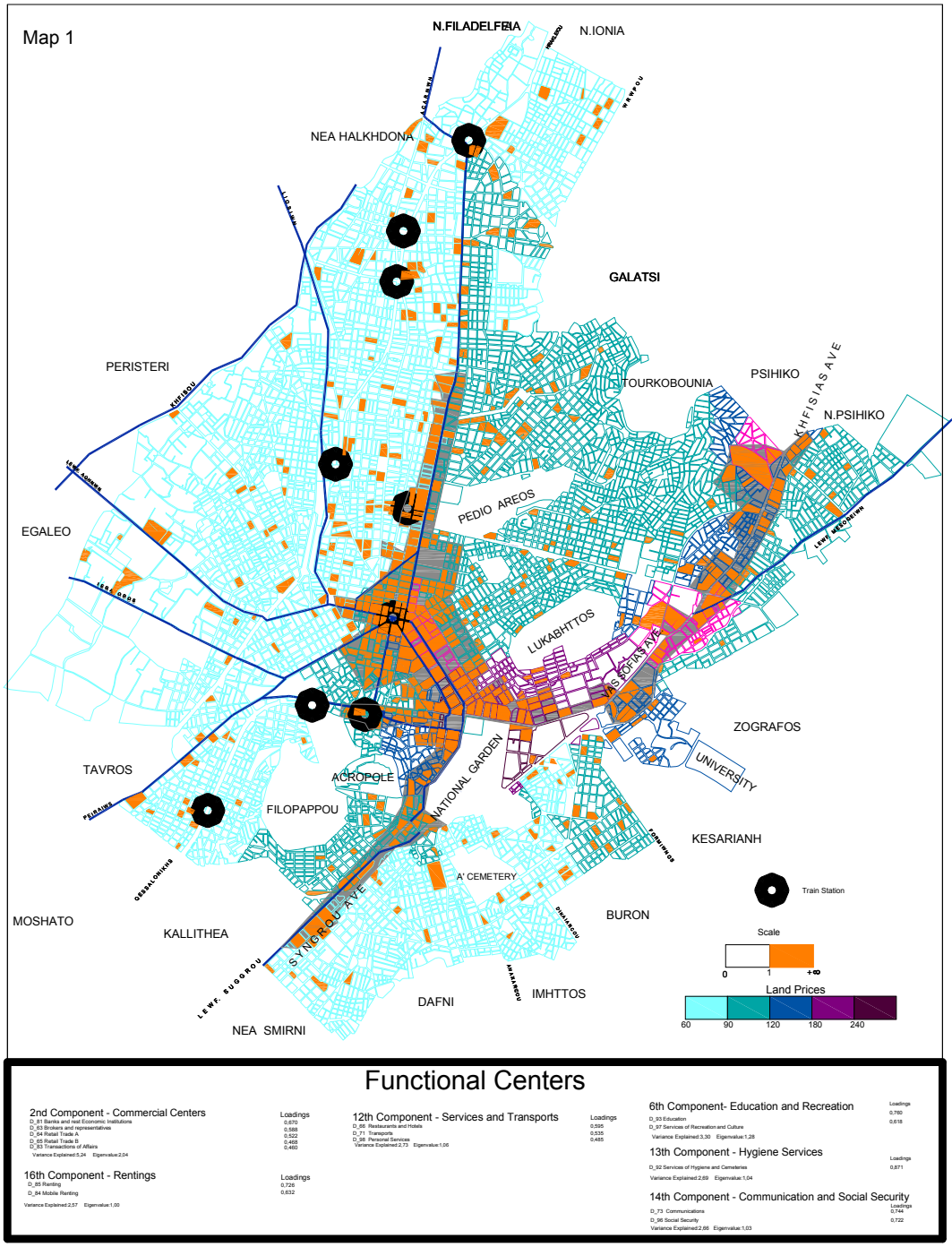
Regarding to restrictions lack in activities allocation, such as the first Urban Plan that determined their areal posts[20], the criterion that determined their allocation, was this of the best possible function in the frames of the wider rational city's operation[21].

This is proved by the fact that there has not arised a "rule" that certain city's functions are allocated in regions with certain land values. Fault Regulating Plan the criteria of functions allocation and their areal changes are except land and floor values centricity, accessibility from central road axes, adjacency with additional and "compatible" functions, more costumers possible attendance e.t.c., are those that determine activities allocation and in general the forces relative with the shaped markets function.

We realise that an "internal functional rule" exists, which organises the city with the criterion of optimal function achievement and that finally land values do not dictate the municipality's Functional Structure, but up to a point result from the already shaped functional status. This "internal functional rule" is co-drugging land values, based on the possibility of surplus values achievement from each activity's function.

[17] of 1988
[18] With zoning layout.
[19] At central axes roadside areas.
[20] It was enacted in 1989.
[21] Research has ascertained that 64% of employment in economic activities allocation is based on their linear relations.

Deductively city's function, the market forces and the best possible functions operation rules, that contribute in the functional specialisation and the economic activities segregation, are those that determine land values and no reverse.



Functional Centers

2nd Component - Commercial Centers

	Loadings
D_81 Banks and non Economic Institutions	0,670
D_83 Brokers and representatives	0,588
D_84 Retail Trade A	0,522
D_85 Retail Trade B	0,468
D_93 Transactions of Affairs	0,460

Variance Explained:5,24 Eigenvalue:2,04

16th Component - Rentings

	Loadings
D_85 Renting	0,726
D_84 Mobile Renting	0,632

Variance Explained:2,57 Eigenvalue:1,00

12th Component - Services and Transports

	Loadings
D_66 Restaurants and Hotels	0,595
D_71 Transports	0,535
D_96 Personal Services	0,485

Variance Explained:2,73 Eigenvalue:1,06

6th Component- Education and Recreation

	Loadings
D_93 Education	0,760
D_97 Services of Recreation and Culture	0,618

Variance Explained:3,30 Eigenvalue:1,28

13th Component - Hygiene Services

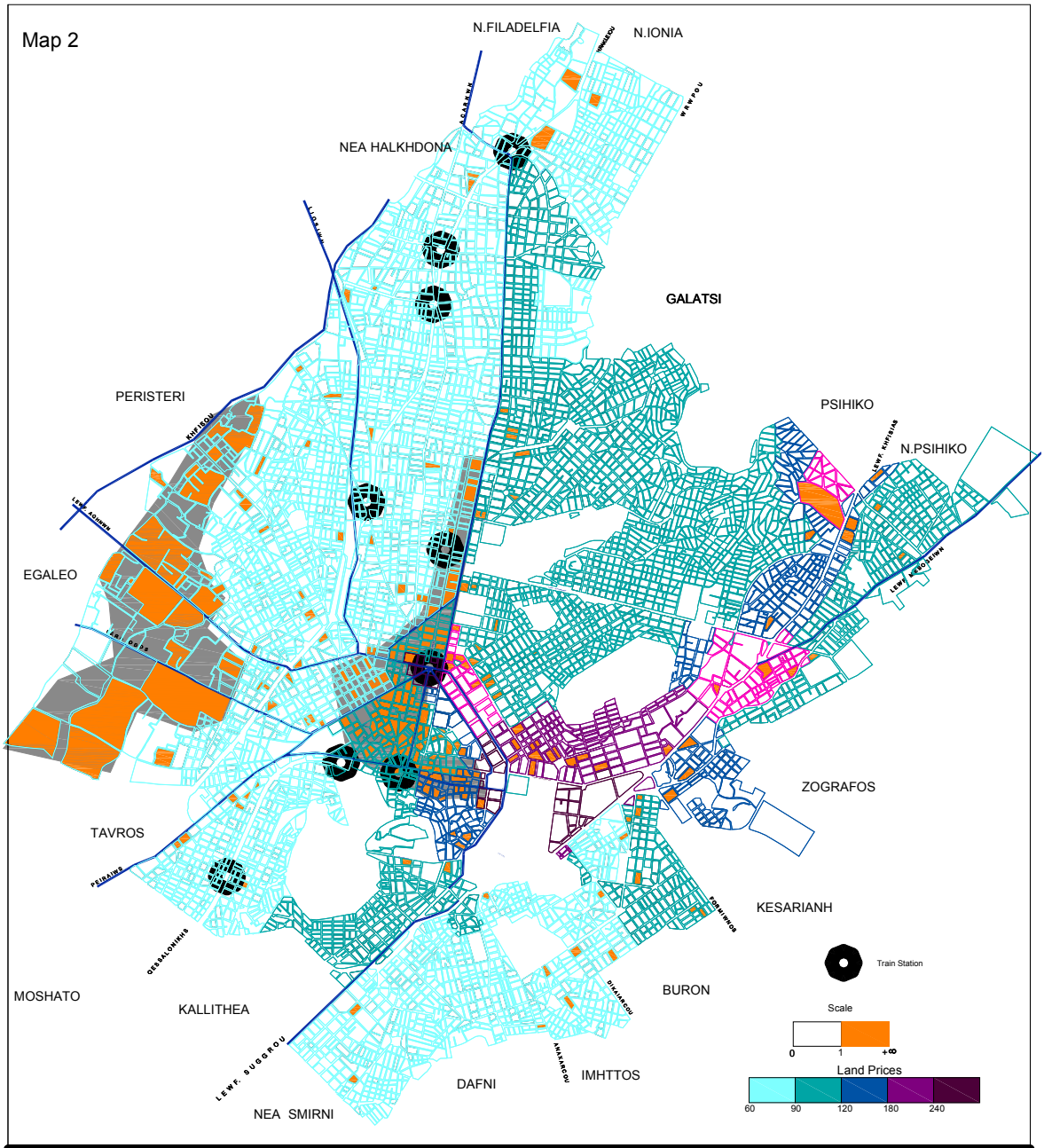
	Loadings
D_92 Services of Hygiene and Cemeteries	0,871

Variance Explained:2,69 Eigenvalue:1,04

14th Component - Communication and Social Security

	Loadings
D_73 Communications	0,744
D_96 Social Security	0,722

Variance Explained:2,66 Eigenvalue:1,03



Not environmentally harmful industry

1st Component - Personal Products distribution

		Loadings
D_29	Leather and furs Industries	0,802
D_24	Clothing and footwear Industries	0,769
D_39	Rest Industries	0,618
D_61	Wholesale Trade	0,539

Variance Explained:9,32 Eigenvalue:3,63

5th Component - Permanent Products Industries

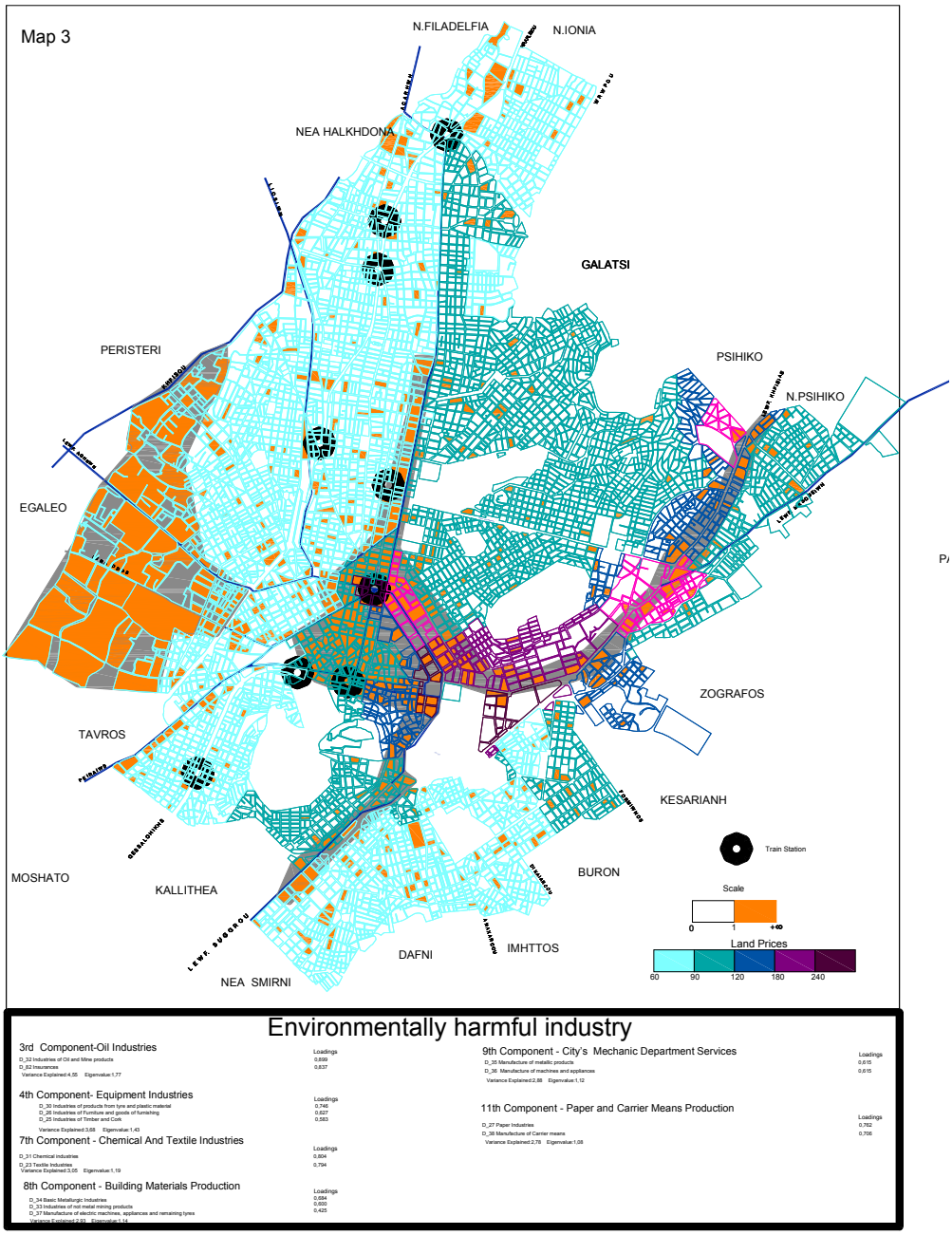
		Loadings
D_22	Tobacco industries	0,824
D_28	Printing, Publications and relevant activities	0,783

Variance Explained:3,42 Eigenvalue:1,33

15th Component - Food Industries

		Loadings
D_21	Drinks Industries	0,769
D_20	Industry of Food except drinks	0,550

Variance Explained:2,63 Eigenvalue:1,02



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5 COMMENTS

Based on the 2 reviewers' feedback we have enhanced the relative parts of our paper. We add 2 additional responses to the 1st reviewer which we don't think it's necessary to add in the final paper, and these are the following:

1) Our aim is not to study the difference of land values between 1985 and today's actual prices, but the relation of land values with Urban land uses allocation.

2) We include the basic terms of Principal Components Analysis in order to make the paper easier to comprehend.

The Principal Components Analysis seeks a linear combination of variables such that the maximum variance is extracted from the variables.

- The Rotated Component Matrix determines what the components represent in relation with the variables.
- Loadings are the correlation coefficients between the variables and components.
- Varimax rotation is an orthogonal rotation of the factor axes to maximize the variance of the squared loadings of a component on all the variables in a component matrix, which has the effect of differentiating the original variables by extracted component. Each component will tend to have either large or small loadings of any particular variable.
- The % of Variance column gives the ratio, expressed as a percentage, of the variance accounted for by each component to the total variance in all of the variables.
- Each Eigenvalue for a given component measures the variance in all the variables which is accounted for by that component.