Land Development and Realization of Local Physical Plans in Urban Areas in Turkey: A Model

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Key words: Land, local physical plan, implementation, land readjustment.

ABSTRACT

The main objective of application of local physical plans in urban areas is to constitute the healthy urban structure, to provide land development and to regulate the use of private and public land for public interest. The other important objective is to prevent sprawl of city and chaotic growth. Especially, subdivision is an important tool for application of physical planning decisions in the urban space in Turkey. The municipalities are responsible for the application of local physical urban plans. There is not any sufficient research related to realization of subdivision in urban spaces throughout the Turkey. The purpose of this study is to investigate whether there is a relationship between the realization of local physical plans and population, population growth rate, global density in urban areas according to local physical plans, adequacy of budget, socio-economic index, the number of technical personnel in municipalities, existence of prejudices to land readjustment method.

For this research, a sample survey method is used and 468 questionnaires are completed by Planning Office of the urban municipalities in Turkey. In the model, the index of realization local physical plan are used as a dependent variable and population, population growth rate, global density in urban areas according to detailed plans, adequacy of budgets, socio-economic index, the number of technical personnel, existence of prejudice to land readjustment method. Multiple Regression Model is utilized for Turkey case.

The results of the paper can be used to identify the problems concerning the realization of local physical plans and to suggest solutions to these problems based on existing legislation in Turkey in an international context.

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1. INTRODUCTION

Urban planning express a widely process which includes the identification of problem, the determination of aims and goals, analysis, the production of alternative solutions, decision making and implementation. The last stage is different from the others. This stage should provide space for all of decisions in plans.

Plan is an important tool in reaching aims and goals of planning in this process. Although plan hierarchy in planning system can change from country to country, generally, plans can be thought in two groups: First one is the socio-economic plan and the second one is physical plan. Socio-economic plans are considered in national or regional level. The aim of socio-economic plans is to set general principles and concrete development aims and goals in its own level. Second one, physical plan is also divided into two groups that are superior and local physical plans. Especially, local physical plans are important tools by providing shaping the space directly. Local physical plans constitute according to the decisions of socio-economic and superior plans, they reflect their decisions to the space. The goal of the local physical planning is not only to fulfill basic needs in settlements, but also, is to constitute the achievement of good urban design, efficient use of public resources, the good use of land and the creation of high quality urban environments. (22,23)

The implementation of local physical plans is the much more specific than the others. It contains a complex process starting from the adaptation of local physical plans until to the construction of buildings on land according to plan. In this study, the realization of the local physical plans is thought in a narrow process. Building permission and control is not included in to the process.

The consequences of rapid urban growth have affected the urban space in Turkey negatively (19). There are several problems, like the growth of illegal housing areas, insufficiency in land market and infrastructure and essential services (roads, parks, and car parks) according to different studies. (4,9,12). Two reasons related to these problems can be discussed. First reason is that local physical plans in Turkey are either produced with substandard quality or even not produced. Second one is the problem in the application of local physical plans. Up to now, any detailed research has not been done dealing with the quality and quantity of local physical plans in Turkey. Iller Bankasi, a public authority, plays an important role in preparing and financing local physical plans (8). Local physical plans (except privately initiated plans, they have a small percentage) in Turkey, satisfies at least minimum quality provided by law. Generally, all the municipalities has prepared their own local physical plan once, 37.1 percent of municipalities have been prepared local physical plans second time, 17.5 percent of their third time and 6.2 percent of their fourth time. So, the local physical plans cannot be blamed only, to cause the problems mentioned above although their quality is

disputable. The point is they cannot be applied to the space properly. There are not enough sources about the application of detailed plans in Turkey. It has been said that infrastructure and essential service areas in urban areas is unsatisfactory for both existing and new development areas (12). The lack in producing of urban plots is determined in Habitat II Report. (20) According to this report, Turkey has to produce urban plots for housing, 25000 hectare in 2000 and 30000 hectare in 2005 and also the same amount urban areas are needed for other functions apart from housing function. According to the other study, (18) Turkey have to produce 320.000 house units in a year depending on the development of population, 70.000 house units for renewal and 5000 house units for disaster. So urban plots of 13.680 hectare are needed in a year in Turkey. These findings show the importance of application of local physical plans but there has not been any study which grade the application of local physical plans in Turkey.

The purpose of the study is to investigate whether there is a relationship between the realization of local physical plans in different city size groups and population, population growth rate, budget possibilities, socio-economic index, the number of technical personnel, existence of prejudice to land readjustment method in Turkey. For providing this purpose, an index is needed to be developed.

The paper is organized in the following way. Turkish planning system is given in the next section. In other section methodology is determined. Then model is given and the definition of the variables is made, regression result is explained. The final section is devoted to a conclusion, and the implications of the result for Turkish Planning System.

2. TURKISH PLANNING SYSTEM

Planning system in Turkey has a complex structure. This structure has been shaped with various planning laws since 1882 up to now. Turkey has a long tradition of urban planning. Buildings and Streets Ordinance of 1882 is commonly cited at first modern city planning law in Turkey. It gives more priority to buildings and its surroundings than the urban scale but the rules in this law are very important from the perspective of modern urban spaces. That law provided the basis of future planning legislation. Municipalities Law came into force in 1930. This law gave power to the all municipalities for preparing of local physical plans (implementation plans) those have the population of 2000 or more. Then the new The Building and Streets law passed in 1933. (25) Although this law remained in force during the 24 years, the result on the urban areas in Turkey is not successful. Instead of this law, Act No.6785 came into force in 1956. With this law, a population criterion was put for preparing of local physical plans. The population criterion was determined as above 5000. Act No. 6785 brought first time the concept of zoning planning system. According to this law, local physical plan was accepted by the council of municipality, but after then, it had to be approved exactly as it was or modified by Minister of Public Works. This law was changed with Act no.1605 in 1972. But Act no.6785 determined to be realized the process of approval of local physical plans by central administration. This state caused to the problems concerning time in amendments, supplements and revocations of land use plan and local physical plans (26). While Act no 6785 were into force in period, it only brought decisions in areas in municipality border. But the urban settlements had a dynamic structure in that period.

Although act no 6785 did not response this dynamic structure in urban settlements. This law remained in force during 24 years. Furthermore the land development was shaped according to unique parcel - building approach. (Gök, Aktura)

Act no 3194 came into force in 1985. This law is still in force and has been the main source for Turkish urban planning system. The law is applied everywhere in areas inside or outside of municipalities border (24). But Act no: 3194 has some the exception laws. There are Tourism Encourage Law (Act no. 2634), Preservation Law (Act no.2863), Istanbul Bosphorus Law (Act no. 2960), Metropolitan Administration Law (Act no.3030). Because these laws came into force before Act no.3194, Act no.3194 did not deal with inside them. This law has also been criticized in many respects. (Tekeli) Nowadays, government has constituted a new planning law bill.

According to Act no.3194 plans are divided to main two sections. First is socio-economic plans, second is physical plans. Physical plans are also divided to sections according to scales as like superior physical plans (1/200.000, 1/100.000,1/50.000 and 1/25.000 scale), land-use plans (zoning plans) (1/5000 and 1/2000 scale), local physical plans (1/1000 scale) (24). (See Figure 1).

Socio-economic plans are divided to the two sections. First one is the country plan that is prepared for five-year periods. Second one is regional plan that is prepared by state planning authority.

According to Act no 3194, the council of municipality throughout municipality area approves the land use and local physical plans. Local physical plans are approved by governorship for the areas out of municipality area. Iller Bankasi or private sectors can also prepare these plans. (24)

With Act no 3194, a criterion is brought for the preparation of local physical plans related to population. This population criterion is 10.000. But if a municipality has not a population of 10.000, the council of municipality may decide on whether the preparation of local physical plans is necessary or not. According to Municipalities Act (Act no 1580) the minimum limit to be a municipality is over 2000. A preparation of local physical plan depends on the council of the municipality for a municipality that has population of 2000. Generally, a municipality especially being founded newly prepares own local physical plans urgently. Because of the number of small municipalities which have population under 10000, the application of local physical plans affect seriously.

Due to exception laws to the Act no 3194, there is power chaos in Turkish urban planning system. (22,23) The different authorities are responsible in preparing or implementation for the different scales and plans. So, a few authorities are responsible for the different scales and plans in the same area.

The process of implementation of local physical plans constitute of six sections. These are given below:

- Implementation programs,
- Subdivision control,
- Land readjustment,
- Compensation
- The Building permission and control.

2.1. The Implementation Programs

Municipalities prepare the implementation programs in three months right after the approval of local physical plans by the council of municipalities. Also this program is set up in five-year periods and there is an obligatory for preparing of implementation programs (10,11). The aims of implementation programs are;

- These programs provide schedule for the implementation the local physical plans.
- These programs are obligatory for municipalities. The municipalities have to realize the subject in the program.
- These programs provide the timing, finance, source, and technical possibilities to the municipalities.

There is an uncertainty with implementation programs in the Act no 3194. Although Act no 3194 brings an obligation to prepare the implementation programs to municipalities, there is not any sanction for municipalities in case the municipalities are not prepared own implementation programs according to local physical plans. This is an important contradiction. So, the municipalities cannot sometimes fulfill this responsibility.

A time restriction is not set up for control subdivision in Act no 3194. The municipalities have to implement the control subdivision according to implementation programs section by section for the whole of local physical plans. For this, land readjustment and compensation are the most important tools.

2.2. Voluntary method

Voluntary method is applied to constitute the control subdivision. In voluntary method, a cadastral parcel is reshaped into site block by using subdivision, consolidation and boundary exchanging. The existing cadastral parcel is re-demarcated according to local physical plans with voluntary method. This method is applied when a landowner wishes to obtain a building permission. If an existing cadastral parcel is enough large, it can be subdivided with respect to local physical plan. The land which covers public use area like roads, park, car parks etc. is contributed to public use in this subdivision process. The contribution percentage of a cadastral parcel can be changed according to the decisions of local physical plans. For example, whole cadastral parcel can be reserved for public use area with decisions of local physical plan. In that case voluntary method cannot be applied. Some points of voluntary method are criticized. These are ;

- The method works when a landowner needs a building permission only,

- The contribution percentage of each cadastral parcel is different from another. This provides inequality in all plans and results loss of revenue for landowners.
- Under some circumstances, a legal agreement is required between landowners.
- When this method is applied, main roads cannot be opened easily. So, municipalities mostly apply expropriation method.
- Although voluntary method is seen as an easy method by municipalities, the problems occurs in implementation of local physical plan in long term.

2.3. Land Readjustment Method

Land readjustment method is the other important method in the implementation of local physical plan in Turkey. Land readjustment is explained in title no.18 in Act no 3194. Landowners who have any parcel in land readjustment area have to give up 35% the total area of their land. This percentage can change according to the size of area required including roads, park, and car parks, playground within project area. Land readjustment is applied according to size criterion and municipality without the consent of owners in Turkey makes the application. Although land readjustment method has lots of benefits, there are some problems in practice in Turkey. These problems affect the effective and efficient use of land readjustment model in Turkey.

2.4. Expropriation Method

Expropriation procedure is applied according to Expropriation Act that was passed in 1983. Some changes are made in the content in 2001. The content of expropriation procedure with last changes is converted to the more complex structure. Expropriation method has some disadvantages. These are;

- Expropriation is an expensive method for the government,
- A readily available budget is required,
- Due to a mandatory land acquisition process, landowners might have objection for the decision of expropriation for their land,
- Disputes might occur due to determining of land values between government and landowners. This delays the implementation of process.

3. METHODOLOGY

As mentioned before, the purpose of this study is to investigate whether there is a relationship between the realization of local physical plans and population, population growth rate in urban areas according to local physical plans, adequacy of budget, socio-economic index, the number of technical personnel, for different city size groups. So the research is made on the form a questionnaire survey of municipalities selected through a stratified random sampling in Turkey.

Firstly after questionnaire form had been prepared, a pilot survey was made 20 questionnaires to check the feasibility of the questions. Some questions were corrected again and the question form reconstituted. A questionnaire forms were sent by post with back return

envelops to the planning department of the municipalities (2). Questionnaires were posted in October 2000 and was collected upto the latest days of December 2000.The sampling of the questionnaire survey is given in Table 1.

Table1. The Sampling Area of the Questionnaire Survey.

City Size Group (Municipality Size Group) Population	**The Number of Municipalities**	**The Number of Collected Questionnaire Forms**	**Percentage (%) Of Collected Questionnaire Forms**
300.000>	28	28	100
100.000-300.000	71	57	80
100.000-50.000	83	51	60
50.000-10.000	411	116	28
10.000<	2607	216	8.3
TOTAL	3200	468	

The questions are divided up into three sections. Questions corresponding to each are seeking to assess whether local planning authorities:

- -determined the behavior in realization of the local physical plan in own areas;
- -finding out the problems in realization of the local physical plan in own areas;
- -considered a proposal for solutions to problems.

Data analysis is conducted using the statistics software, SPSS.

4. MODEL

A multiple–regression model is applied to all of city size groups. The aim of use of a multiple regression model usage is not only to determine a relation between dependent variable and independent variables, but it is also to assess the possible effects and directions on dependent variable of independent variables over all city size groups. Stepwise regression method is used. When correlations among the independent variables are strong, it is used more than one method of variable selection. The stepwise method is the most frequently used. Stepwise method begin by entering into the model the variable that has the strongest positive and negative correlation with dependent variable; and each subsequent step, add the variable with the strongest partial correlation. With stepwise, at each step, variables are tested for removal. (SPSS). The analysis is given below:

$$Y_i = \alpha_1 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \alpha_2 D_2 + \alpha_3 D_3$$

Y_i =Index of realization of local physical plan in a city
α_1 =Constant;
$\beta_1, \beta_2, \beta_3, \beta_4$ = the coefficients of independent variables
α_2, α_3 =the coefficients of dummy independent variables
X_1 = Population size (log) for city i;

X_2 =Population growth rate for city i;
X_3 =Socio-economic index for city i
X_4 = the number of technical personnel in municipality i (in city i)
D_2 = the adequacy of budget for the application of local physical plan in city i (Dummy Variable)
D_3 = whether if there is the prejudice to land readjustment method. (Dummy Variable)

4.1 Variables

4.1.1. Dependent Variable

Dependent variable is an index that it is composed of factor scores by using factor analyzing with principal component analysis extraction method. Dependent variable contains from six questions in questionnaire. These are collected in a single factor. These are;

Y1 whether if there is implementation program in city i;
Y2 whether if there is realizing the application of local physical plan part to part in city i;
Y3 whether if there is use of temporary or permanent of voluntary method in city i;
Y4 the preference of usage of voluntary method in city i;
Y5 the preference of usage of land readjustment method in city i;
Y6 the amount of realizing subdivision control in i city;

4.1.2. Independent Variable

4.1.2.1. Population Size

Population size is taken as the one of the independent variables of analysis in order to take into consideration growth effect in realization of local physical plans.

4.1.2.2. Population Growth Rate

The urban growth rate is another variable of the analysis. The calculation procedure for the urban growth rate assumes that past population growth has followed a linear pattern in which population is explicitly a function of time. In order to take into consideration the differing time periods, each intercental period was reduced to an average annual change figure. This is expressed as:

$$r_i=((P_n-P_0) /P_0) / N$$

r_i= annual population growth rate for city i;
P_n= population of city i in most recent census;
P_0= population of city i in the preceding cencus;
N= number of years in an intercental period.

4.1.2.3. Socio-Economic Index

The socio-economic index is another variable of analysis. The aim of use of socio-economic index is to assess in regression analysis the differences between city size groups. There is a study prepared by State Planning Authority in 1996. This study put forward the differences between cities with respect to socio-economic. But the centers of county and provinces only take part in. Towns are not taken into consideration to the context of this study. So, another solution is considered to add the socioeconomic index to regression analysis. The Chamber of Surveying Engineers of Turkey is published the list of unit prices for every year. This list of price is determined by taking into consideration to the socio-economic level of cities, counties and towns. In regression analysis, this index is used taken form list of unit prices in 2001.

4.1.2.4. The Adequacy of Budget for the Application of Local Physical Plan

This data is a dummy variable and data is extracted from questionnaire.

4.1.2.5. The Number of Technical Personnel in Municipality

The number of technical personnel in municipality is another variable of analysis. This variable constitutes from total number of technical personnel working in municipality as like urban planner, surveying engineer, and other technical staff.

4.2 Results

The regression results are given respectively in Table 2.

Variables Entered/Removed

Model	Variables Entered	Variables Removed	Method
1	X1	.	Stepwise (Criteria: Probability-of-F-to-enter <= .050, Probability-of-F-to-remove >= .100).
2	X4	.	Stepwise (Criteria: Probability-of-F-to-enter <= .050, Probability-of-F-to-remove >= .100).
3	X3	.	Stepwise (Criteria: Probability-of-F-to-enter <= .050, Probability-of-F-to-remove >= .100).

a Dependent Variable: Y

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.674	.455	.453	50.6710
2	.690	.476	.474	49.7192
3	.694	.482	.479	49.4943

a Predictors: (Constant), X1
b Predictors: (Constant), X1, X4
c Predictors: (Constant), X1, X4, X3

Coefficients

		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
Model		**B**	**Std. Error**	**Beta**		
1	(Constant)	13.352	2.671		4.999	.000
						0
	X1	3.829E-04	.000	.674	19.708	.000
2	(Constant)	6.686	3.034		2.203	.028
	X1	3.019E-04	.000	.532	11.345	.000
	X4	3.287	.754	.204	4.360	.000
3	(Constant)	-10.938	8.273		-1.322	.187
	X1	2.899E-04	.000	.511	10.737	.000
	X4	2.928	.767	.182	3.820	.000
	X3	25.844	11.295	.086	2.288	.023

a Dependent Variable: Y

Model 2 is accepted as a regression model. The entire of the regression model is significant according to $F_{0.05}$ (2, 465)= 211.207. In this regression analysis, when t test is made for each coefficient, t test for each coefficient is significant. ($T_{0.025}$ with 465 degree of freedom).

According to the regression result, the value of R is 0.69. Independent variables have significant correlations with the index of realization of local physical plan in cities. For this model, R^2 is 0.476. According to R^2, population size and the number of technical personnel in municipalities explains almost %48 of the variability of constituting index.

The sign of coefficients is on same direction. All of them are positive. This result responds to expectations.

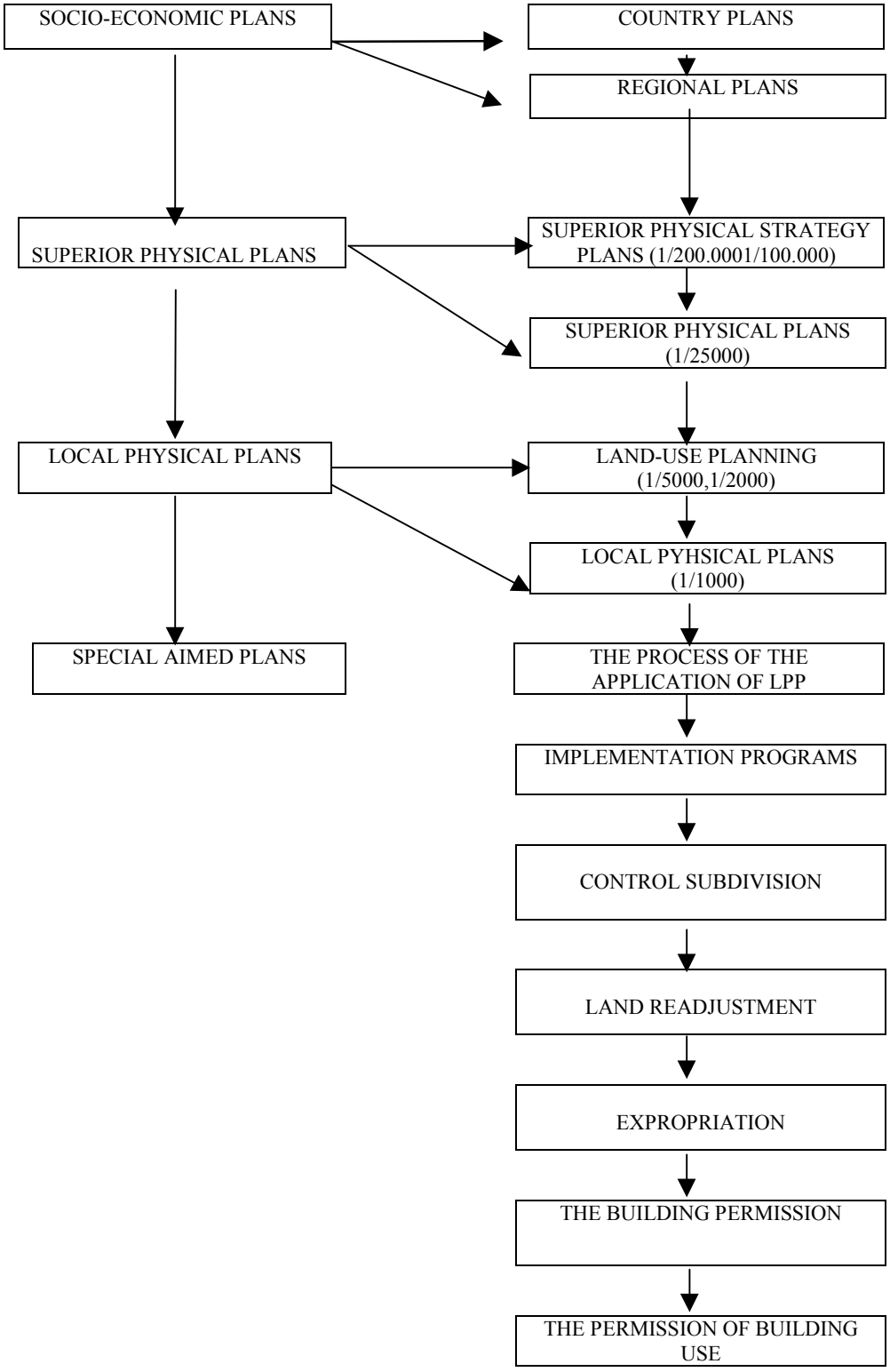
5. CONCLUSION

The main objective of the study is to investigate whether a relationship exists between the index of realization of local physical plan application and population, population growth rate, adequacy of budget, socio-economic index and the number of personnel for city size groups. This analysis results are confirmed. Index of realization of local physical plans in cities in Turkey can be explained with population and number of technical personnels. It also it is found that the effect of the other dependent variables like population growth rate, socio-economic index, sufficiency of butget, existence of prejudice to land readjustment method is not important.

This research and its findings can help to the re-regulation of local physical plan application in development law in Turkey. Act no 3194 only determined a single procedure in the application of local physical plans for each city population groups. For example, city population groups of over 300.000 and the ones between 50.000-10.000 have to apply the same procedure for application of local physical plan. But these two groups have different features. The realization rate of local physical plans can be increased by considering the features of different population groups. The new policies in realization of local physical plans should be provided in Turkey to fulfill basic needs in settlements and to constitute the

achievement of good urban design, efficient use of public resources, the good use of land and the creation of high quality urban environments.

FIGURE 1. Turkish Planning System and Hierarchy of Plans



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