

# **The Use of Land Readjustment as a Land Development Method in Turkey**

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**Key words:** Local physical plans, land acquisition, land readjustment, expropriation.

## **ABSTRACT**

In realization of local physical plans, land readjustment method is that the most important method in Turkey. Land readjustment is a method whereby the ownership of scattered and irregular plots of agricultural land is polled, roads and main infrastructure are built, and the land then subdivided into urban plots (35% of the total land in Turkey). Each plot contributes a portion of their previous land holding to provide space for roads. The land readjustment has to be realized by municipalities without request. For redistribution in the process of the land readjustment is determined as a size criterion in Turkey. The land readjustment is named as Article 18 in Turkey. Although the Article 18 (the land readjustment) is an obligatory for municipalities, the municipalities cannot be commonly applied the Article 18. Instead of Article 18, the Articles 15-16 are usually applied by voluntary reallocation. The Articles 15-16 is more fractional than Article 18. However, any detailed research related to the use of land readjustment in municipalities in Turkey has been not made so far. The main purpose of this study is to investigate the use of land readjustment method in Turkey by evaluating the other land acquisition methods. The other purpose of paper is to determine the importance degree in solution of problems in land readjustment process in Turkey according to two sampling groups. For this research, a sample survey method is used and 468 questionnaires are completed by Planning Office of the Municipalities of urban areas in different population groups and 169 questionnaires are realized by surveying engineers in Turkey.

The results of the paper can be used to identify the problems concerning the land readjustment method in Turkey and to suggest solutions to these problems based on existing legislation in Turkey.

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## **1. INTRODUCTION**

There are two main problems in Turkish urban cities. First problem is lack of the achievement of good urban design, inefficient use of public resources, the inefficient in use of land and the creation of high quality urban environments. Second problem is urban plots are not produced parallel with the rapid urban growth. The two main problems have mentioned some studies. According to these studies (Edsio, Varley, 1998; Keles, 1990; Koca 1997) it has been said that infrastructure and essential service areas in urban areas is unsatisfactory for both built-up and new development areas. The lack in producing of urban plots is also determined in Habitat II Report. (1996) According to this report, Turkey have 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, (Tezesen, Agaçlı, 1993) 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 13.680 hectare urban plots is needed in a year in Turkey.

These findings appear as necessary to reconsider about land acquisition methods in Turkey. The main purpose of the study is to investigate the use of land readjustment method in Turkey by evaluating the other land acquisition methods. The other purpose of paper is to determine the importance degree in solution of problems in land readjustment process in Turkey according to two sampling groups. This is realized with factor analysis. First sampling group is the planning office of the municipalities of urban areas in different population groups. Second sampling group is surveying engineers who have engineering/consulting offices.

The paper is organized in the following way. Turkish land acquisition methods are given in the next section. In the other section, use of land readjustment in Turkey is examined and then the problems are given. Later, factor analysis and their results are inspected. The final section is devoted to a conclusion and the implications of the result for Turkish Land Readjustment Procedure.

## **2. TURKISH LAND ACQUISITION METHODS**

### **2.1. Expropriation Method**

If the government urgently needs the land for public use like hospital, school, main highway etc., the expropriation method is applied. The application of the method depends to make a decision for public interest. But there is not a necessity to make decision of public interest in case the implementation of planning decisions.

Expropriation procedure is applied according to Expropriation Act that was passed in 1983. Some changes are made in the content of the Act in 2001. The content of compensation procedure with last changes is converted to the more complex structure. According to the new changes, after making a decision of public interest, this decision is declared to the land register office and a limitation is brought the use of land. The commission of determination of land value and conciliation commission is constituted. First, priority is given to the purchase of land. If an agreement for purchasing the land between the landowner and the conciliation commission is supplied, the amount of compensation of the land is deposited in a bank within 45 days periods. If not, landowner can litigate against to compensation procedure or the reevaluation of land value. According to court decision, an agreement also can be supplied, if not, land survey, assessment the value are determined by experts and then, payment and registration is realized. Landowners can object to the amount of compensation.

Compensation method has some disadvantages. These are;

- Compensation is an expensive method for the government,
- A readily available budget is required,
- Due to a mandatory land acquisition process, landowners might have objections to the decision of compensation for their land,
- Due to determining of land valuation in compensation process can occurs a dispute between government and landowners. This delays the implementation process.

The effect of the new changes in expropriation act to the implementation of local physical plans exactly has not been known yet. But it is obviously seen that new changes can prevent to usage of expropriation method as an acquisition method. Municipalities or the other public authorities can not deposit the land fee in a bank due to the insufficiency of budget. Before changes in expropriation act, this obligation was absent.

## **2.2. Voluntary Method**

Voluntary method is also 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, all of a cadastral parcel can cover with 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 of plans and results to lost of revenue to landowners.
- In some circumstances a legal agreement is required between landowners.

- When this method is applied, main roads cannot be constructed easily. So, municipalities apply compensation method.
- Although voluntary method is seen as easy method by municipalities, the problems occurs in implementation of local physical plan in long time period (Akdeniz, 2001; Yomralioglu, Tüdes 1996).

### **2.3. Land Readjustment Method**

Land readjustment method is one of the other land acquisition methods. Land readjustment is explained in title no.18 in Act no 3194. According to this title, landowners who have any parcel in land readjustment area have to give up 35 % of 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 a lot of benefits, there are some problems in practice in Turkey. These problems affect the effective and efficient use of land readjustment model.

### **3. USE OF LAND READJUSTMENT METHOD IN TURKEY**

According to Larsson (1997), the general aim of land readjustment is, through cooperation between the landowners of an area of land, to adapt its subdivision and facilities to plans for new or more efficient use of an urban nature. According to Sorensen (1999,2000), land readjustment is a process whereby ownership of scattered and irregular plots of agricultural land is pooled, roads and main infrastructure are built, and the land is then subdivided into urban plots. Each landowner must contribute a portion of their previous land holding to provide space for roads, parks and other public space and for reserve land. The attractiveness of method for landowners is based on the fact that substantial increases in the value of land can be achieved by process, so that the value of the individual land holdings can be greatly increased, even though the remaining area is smaller. The attraction for planning authorities is that projects provide land for public facilities, and build needed urban infrastructure. According Seele (1982), land readjustment is a crucial land management tool in urban planning when suitable reformation of private land is necessary for residential purposes. According to Viitanen (2000), The characteristics of urban land readjustment procedure is a change in existing land use and/or land use intensity with the purpose of producing or reorganizing built -up areas. The urban land readjustment procedures can be divided into three categories; readjustment for plan implementation, joint land development and land pooling. According to Viitanen (2000), the procedure for adjustment for plan implementation is based on a detailed local plan prior to the procedure, and depending on whether or not the profit has been shared out between the landowners. This can be land exchange or urban land replotting. A feature of the joint land development procedure is that the detailed local plan is prepared in connection with the land readjustment process. In the land pooling procedure landowners organize and implement the readjustment procedure with the related detailed land use plans in one and the same process. According to Viitanen (2000) The German procedure can be classified as urban land replotting, Swedish procedure as joint land development, French procedure as pooled land development. According to the Viitanen's division, Turkish urban land readjustment procedure might be identifying as urban land replotting like German

procedure. This similarity is not a coincidence. Because the main laws in Turkish planning system were prepared by being inspired from Germany planning law.

The land readjustment procedure began to be applied in 1864 with Building and Roads Ordinance. However the land readjustment procedure was only applied for areas that being on fire. The same approach also continued in 1882 with Building Law. The context of the land readjustment procedure was widened in Act no 1351 that it was prepared for determining of the duty of Ankara Planning Authority. This law gave power to Ankara Planning Authority to apply the land readjustment. In this law the contribution percentages of each land parcel to the land readjustment was determined as %15. The Building and Roads Law was passed in 1933. In this law, rules related to land readjustment was the same with in Act no 1351. Then Act no 6785 came into force in 1956. According to this law, each landowner must contribute %25 of their land to provide roads, parks, car parks, squares etc. Land readjustment was explained in title no.18 in Act no 3194 that this act is still in force. According to this title, landowners who have any parcel in land readjustment area have to give up 35 % the total area of their land for purpose. This percentage can change according to the size of area required including roads, park, and car parks, playground for children within project area.

The council of municipalities initiate land readjustment procedure to implement the local physical plan. The execution of land readjustment procedure is fundamentally under the responsibility of the municipality. The council of municipalities determines area of the land readjustment project. The municipality might give the power to a surveyor engineer or a private surveying office to execute the land readjustment project. The land register office is also informed about the project so that any interested people are notified about project. Then the local physical plan, cadastral map and topographical map are supplied. If necessary, the topographical maps can be updated. Then reallocation plan is constituted. The reallocation is shaped according to local physical plan. The reallocation plan organizes plots in a manner that makes it possible for them to be developed in accordance with the local physical plan. Using this plan, site blocks are demarcated in the field and fixed block corners are re-surveyed.

According to Act no 3194 and title 18 and the ordinance related to title 18, public areas are divided to two categories in project area. First category is public areas like roads, squares, parks, car parks, play grounds for children, police station and religious centers. These public areas are provided with the contribution percentage within project area. According to this title, landowners who have any parcel in land readjustment area have to give up 35 % the total area of their land for first category purposes. If the contribution percentage within the project is greater a %35, difference should be expropriated by the government in order to reduce the project of the contribution percentage. According to Act no 3194, title 18, %35 is the maximum contribution limit for land readjustment projects. Second category is public areas like school, hospital, public service area, and kindergarten. Government should expropriate these areas. But this sort of expropriation is different from the others. The landowners are shared in these public areas in project area. These public areas are expropriated from the new landowners after reallocation not from the former landowners before reallocation. (Unal, 1996)

The contribution percentage for roads, squares, parks, car parks, playgrounds for children, police station and religious centers within project should be determined. This is important subject in land readjustment in Turkey. The project boundary is taken as an input area. The determination of participating land parcels is followed by the calculation of site block areas. The contribution percentage is determined with a formula. This formula is given below:

- A= Total area of the input land parcels, project the area  
 B= Total area of the site blocks,  
 A-B= Total area of required public use land,  
 C= The contribution percentage for roads, squares, parks, car parks, playgrounds for children, police station and religious centers within the project, (First Category)  
 D= the percentage of land given back to original landowners,  
 $a_i$ = Land parcel area,  
 $b_i$ = the contribution area for a parcel,  
 $c_i$ = Land area given back to owner.

$i = 1,2,3 \dots n$  (number of parcels)

$$C = (A-B) / A$$

$$D = 1 - C$$

$$b_i = C * a_i$$

$$c_i = D * a_i$$

or  $c_i = a_i - b_i$

The contribution percentage for public areas like school, hospital, public service area, kindergarten should be determined. So,

- A = Total area of the input land parcels, project the area  
 E = Total area of these public areas  
 F = the contribution percentages for school, hospital, public service area, kindergarten (Second Category)  
 $a_i$  = Land parcel area,  
 d = the contribution area for a parcel to these public areas  
 I = 1,2,3...n (number of parcels)

$$F = E / A$$

$$d = F * a_i$$

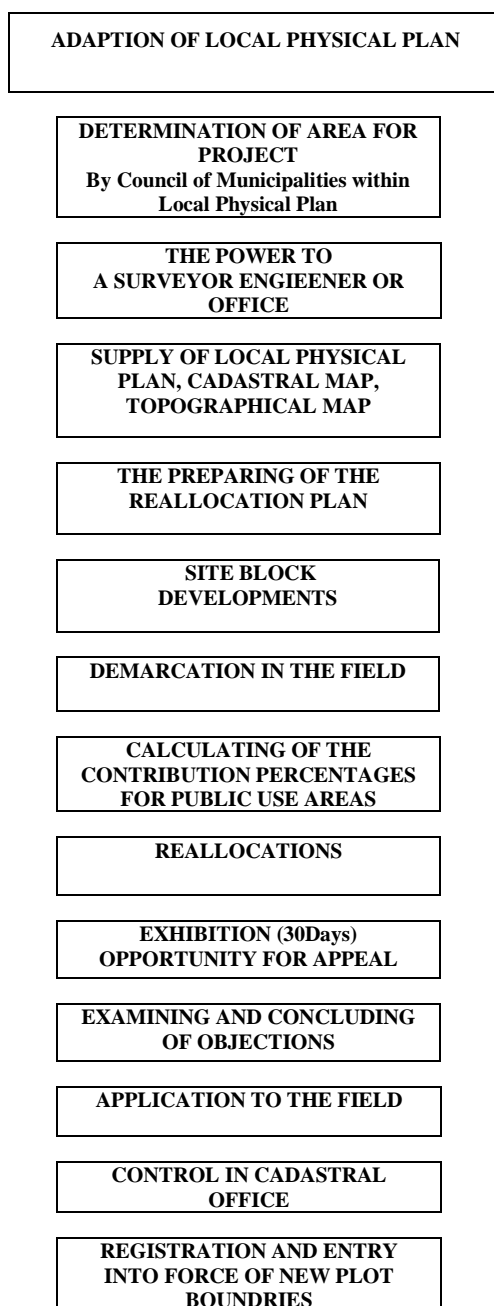
The other important subject is the land re-allocation in land readjustment procedure. Because it is so complicated. In this stage, landowners receive new lots in a different size and location to their original parcel. There are some criteria in Act no 3194 and title 18 and the ordinance related to title 18. These are;

- New plot should be allocated in the same zone or in an equivalent location in accordance with their shares of land area given back to owner,
- Buildings which has to be protected should be kept in a separate plot as shareless.

- After reallocation, if the land area given back to owner cannot be divided as a separate plot, plots may be regulated in shared ownership.

After land distribution, subdivision plan is put on display during 30 days. The landowner can object to subdivision plan in this period by petition to the municipality. After objections are evaluated by the council of municipalities. If necessary, the changes in subdivision plan are made and subdivision plan is sent to the cadastral office to control documents. Then the land title office registers new plots. New land titles are prepared and distributed to the original landowners. Table 1 shows the Turkish land readjustment procedure.

Table 1 Turkish Land Readjustment Procedure





#### 4. PROBLEMS IN LAND READJUSTMENT PROCEDURE IN TURKEY

Despite the important advantages of the land readjustment method, there are still some problems in Turkey. These problems affect badly the process of system. These problems are summarized:

- The boundaries of land readjustment plan are not exactly determined by thinking the boundaries of local physical plan. So, there can be the unbalances in determining of the contribution of percentages in different land readjustment project. For example, while the contribution of percentage for public areas in a project is %25, it might be %34 in other project in Turkey.
- Voluntary method is utilised more than land readjustment method in implementation of local physical plans in Turkey. This method generally provides inequality in all of plans and results loss of revenue to landowners.
- There is insufficient information management in Turkey.
- While the boundaries of land readjustment project are determined, a feasibility study should be made.
- Under some circumstances, although the contribution percentage needs to be converted to money, this cannot be achieved.
- After reallocation, in case the land area given back to owner is too small, plots are regulated in shared ownership in new parcels. This small area should be converted to money with the consent of landowner.
- According to title 18 and the ordinance related to it, change in property structure is not be made by the decision of land readjustment project. This can be done only by court decision.
- Equitable benefits are not obtained after project. Because the number of stories, land use, view, proximity to commercial areas, other public facilities are not taken into consideration during land readjustment project.
- There is not public participation to land readjustment procedure.
- Politics can be affect negatively to the land readjustment projects in Turkey. The city council has power to allow the land readjustment projects; some land readjustment projects can be delayed or cancelled for political reason. Because the number of people whom are living in a project area can affect the local election results, therefore, elected council members may not be positive about implementation of land readjustment project. (Yomralioglu, Tudes, 1996)

- Inadequacy of technical personnel in municipalities are big problem for the land readjustment projects.
- Budget problem exists in municipalities to success the land readjustment project.
- Qualification problem exists between surveying engineers to execute the land readjustment projects.

## 5. ANALYSIS

### 5.1. Methodology

As mentioned before, the purpose of paper is to determine the importance degree in solution of problems in land readjustment process in Turkey according to two sampling groups. For this research, a sample survey method is used and 468 questionnaires are completed by Planning Office of the Municipalities of urban areas in different population groups and 169 questionnaires are realized by surveying engineers in Turkey.

Firstly after questionnaire form had been constituted, 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. Questionnaires were posted in October 2000. The research questionnaire was collected to the latest days of December 2000. The sampling of the questionnaire survey is given in Table 1. The other questionnaires were also posted to surveying engineers in January 2001. The research questionnaire was collected the latest of February 2001.

Table 2. 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
<b>TOTAL</b>	3200	468	

The questions are used for determining the importance rate of problems in land readjustment process in two questionnaire studies. These questions have four ordered categories indicating the respondent's preference for determining the importance degree of problems.

## 5.2. Factor Analysis

Factor analysis is often used in exploratory data analysis to study the correlations among a large number of interrelated quantitative variables by grouping the variables into a few factors; after grouping, the variables within each factor are more highly correlated with variables in that factor than with variables in other factors (SPSS Applications Guide, 1999)

Table 3. Results of Factor Analysis According to Planning Office of the Municipalities

		<b>The Importance Degree in Solution of Problems in Land Readjustment Procedure According to Planning Office of the Municipalities of Urban Areas in Turkey</b>	
		<b>Factor 1</b>	<b>Factor 2</b>
<b>V1</b>	<b>Small areas should be converted to money with the consent of landowner in LR</b>	<b>0.652</b>	<i>0.146</i>
<b>V2</b>	<b>Inequalities in Voluntary method should be regulated</b>	<b>0.634</b>	<i>-0.284</i>
<b>V3</b>	<b>Changing in ownership should be made in LR</b>	<b>0.594</b>	<i>0.317</i>
<b>V4</b>	<b>The contribution percentage should be converted to money in some case in LR</b>	<b>0.534</b>	<i>0.359</i>
<b>V5</b>	<b>Financial Adjustments should be in LR</b>	<b>0.495</b>	<i>-0.123</i>
<b>V6</b>	<b>Value criteria should be brought in LR</b>	<b>0.487</b>	<i>0.106</i>
<b>V7</b>	<b>Regulations related to budget should be made.</b>	<i>0.004</i>	<b>0.882</b>
	<b>Explained Variance (%)</b>	<b>29.136</b>	<b>14.889</b>

Extraction Method: Principal Component Analysis.

KMO: 0.714

Barlett's Test of Sphericity

Chi-Square:189.384

Df:21 Sig: .000

Table 4. Results of Factor Analysis According to Surveying Engineers

		The Importance Degree in Solution of Problems in Land Readjustment Procedure According to Surveying Engineers in Turkey		
		Factor 1	Factor 2	Factor 3
V1	Regulations related to budget should be made.	<b>0.698</b>	-0.0971	-0.291
V2	Changing in ownership should be made in LR	<b>0.658</b>	0.349	0.113
V3	Value criteria should be brought in LR	<b>0.595</b>	0.008	0.157
V4	Qualification in Surveying Engineer should be	0.575	<b>0.772</b>	-0.268
V5	Financial Adjustments should be in LR	0.268	<b>0.745</b>	0.379
V6	The contribution percentage should be converted to money in some case in LR	0.492	<b>0.590</b>	-0.271
V7	Inequalities in Voluntary method should be regulated	0.273	0.044	<b>0.812</b>
<b>Explained Variance (%)</b>		<b>28.488</b>	<b>20.654</b>	<b>15.290</b>

Extraction Method: Principal Component Analysis.

KMO: 0.581

Barlett's Test of Sphericity

Chi-Square:146.878

Df:21

Sig: .000

The importance degree in solution of problems in land readjustment procedure according to Planning Office of the Municipalities of urban areas in Turkey has two factors. Two factors account for 44 % of the variability of seven variables. First factor accounts for %29.136 and second accounts for %14.9. The correlation between 1 and factor 1 is 0.652. While all variables except v6 are significant associated with factor1, only V6 is strong with factor 2. It can be said that first five variables are related to reform in methods and last variable is related to budget.

The importance degree in solution of problems in land readjustment procedure according to surveyor engineers in Turkey has three factors. Three factors account for 64.43 % of the variability of seven variables. First factor accounts for %28.49 and second accounts for %20.65,third accounts for %15.290. First three variables (v1, v2, v3) are significant associated with factor1, three variables (v4, v5, v6) are significant with factor 2, and only V7 is strong with factor3. It can be said that first two factors related to reforms in LR method. Factor 1 can contain much more reforms in detail. Three factors are related to reform in voluntary method.

## 6. CONCLUSION

In Turkey, land readjustment procedure is complicated. Because there are several problems related to appropriate land readjustment implementations. The readjustment of procedure is possible with changes in laws related to land readjustment. With these changes, the method can be applied more efficiently by municipalities. In this study, the importance degree in solution of problems for land readjustment procedure is determined for two different samplings.

There are differences between two sampling groups in determination of the importance degree in solution of problems in land readjustment procedure. According to Planning Office of the Municipalities of urban areas in Turkey, this can be explained with two factors; while surveying engineers claims that it can be explained by three factors. This difference is an expected situation. Because the precedence of solutions of land readjustment procedure can change according to different actors in procedure. For example, in practice, municipalities generally use the voluntary method to implementation of local physical plans. So, there is a significant correlation between V2 and factor1. Approximately same result is valid for surveying engineers. In practice, surveying engineers generally also use the voluntary method more than land readjustment. For surveying engineers, inequalities in voluntary method should be regulated in procedure. There is strong correlation between V7 and Factor 3.

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