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Valuation based land regulation model and its applicability in Türkiye

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Abstract

Land readjustment works applied in Türkiye are carried out in accordance with the 18th article of the 3194 zoning law. According to the regulation, all of the cadastral parcels in the regulation limit are considered as a whole and are converted into construction parcels. It is natural that there will be an increase in the value of these areas, which are now considered as construction plots. However, in practice, some cadastral parcels in the scope of regulation benefit much from this increase in value, and some parcels are satisfied with only a less value increase. This problem, which is experienced in practice, often brings with it a legal issue or legal lawsuits about the application for citizens. In accordance with the 18th Article of the law with the number 3194, a value-based distribution may be applied in practice in all the parcels that are included within the regulation limit instead of a field-based distribution. This application has a great importance in terms of eliminating the existing problems in this field. However, uncertainties related the valuation procedures weaken strength of the value-based method. In this study; applicability of value-based land readjustment and to be adopted by practitioners, the right development was taken as the basis which directly and most affects the value of the real estate. The Model was applied in a selected pilot study area, the calculated allocation values were compared with the current implementation method.

1. Introduction

With population growth and urbanization, the planned and healthy development of built-up areas depends on the preparation of zoning plans and the reflection of the prepared plans to the land in terms of technical and legal aspects.

In Türkiye, "Land Readjustment" (LR) applications, which is one of the methods of implementing large area zoning plans, are carried out in accordance with Article 18 of the Zoning Law No. 3194 [1].

LR, which is one of the important factors of urban development, is as important as the preparation of zoning plans [2].

LR is an effective method that enables the transformation of cadastral parcels that do not have a useful structure into a more economically usable structure. In addition, the most important features of the method are that it reduces the plan implementation process and can be applied in large regions [3].

With the LR applications, the cadastral parcels within the regulation boundary according to the zoning plans are transformed into zoning parcels, and the economic values of the immovables change along with the cadastral boundaries. The fact that the gain provided to the owners by this economic change is not of the same value for all immovable properties brings along certain problems.

One of the most common problems encountered in LR works carried out according to the current legislation is the objections to the redistribution of parcels, especially as a result of the failure to evaluate the parcels according to objective criteria [4].

In Türkiye, the distribution method in LR applications is based on the area basis. An equal deduction is made from all parcels within the regulation boundary in proportion to the amount of regulation partnership share

calculated. In the LR applications made according to the current legislation; it is not checked whether the zoning parcels created in return for the deduction made are parallel to their values before the arrangement. There are many objective and subjective parameters affecting the values of immovable properties. Considering the determined parameters, the distribution made on the basis of area and the distribution made on the basis of value should be evaluated together. The necessity of this approach and a perspective that a value-based distribution instead of an area-based distribution would be a more just application on behalf of the right holders, and the necessary legal arrangements should be made.

The most important condition for LR to achieve its purpose is that the value distributions before and after the regulation should be equal to each other. With such an approach, all owners in the application area are equally affected and injustices in the application can be eliminated. For this purpose, the cadastral parcels before the regulation and the zoning parcels to be formed after the regulation should be evaluated according to the appropriate value parameters to be determined. In addition, there is a need for a new calculation method based on unit value instead of area in the distribution phase [5].

The approach of Yıldız [6], who presented the value-based distribution proposal for the first time in Türkiye, has been evaluated by many researchers and studies have been carried out on its applicability in Türkiye with various methods. However, regional differences in the parameters affecting the value of immovable property and the existence of uncertainties regarding the value calculation weaken the strength of the value-based approach method [7].

"In order to eliminate these weaknesses, there is a need for an allocation model based on another criterion other than value but directly affecting the value, such as development rights or construction area" [8].

In this study; in order for the value-based LR model to be applicable and to be adopted by practitioners, the amounts of debiting the value differences (road debt) resulting from the parcel frontage length and the fronted road width, based on the "zoning right" that directly and most affects the real estate value, are evaluated as the progress payment construction area and included in the equalization. has been made. The allocation values calculated by applying it in a pilot area that has an implementation zoning plan and will be subject to a regulatory application, were compared with the current application method. In line with the data obtained, it is evaluated that implementing LR applications with a value-based method would be a more-fair approach for rights holders and the public.

2. Material regulation model based on zoning rights

The development right-based LR is a method that ensures that the value increases that will occur after the implementation are transferred to the public and the zoning parcels formed are allocated at their pre-regulation values. The model developed by [8] was applied in the determined regulation area.

In the model; in addition to the increase in value generated by the LR, the theoretical construction area deserved by the parcel before the plan is equalised with the construction area of the parcel that will be formed after the implementation according to the zoning plan, and the total construction area increase provided is transferred to the public. The value difference arising according to the precedent can be distributed to the owners in a fair manner when desired. Spatial value differences are prevented by preserving the rule of allocation to the parcel from its current location [9].

According to the LR model based on the zoning right, the construction areas of participation and allocation should be equal, as shown in Equation 1.

$$\sum_{i=1}^{n} İ\, A_{k_i} = \sum_{j=1}^{m} İ\, A_{t_j} \tag{1}$$

A_{k_i} = Participation construction area of cadastral parcel before the arrangement
A_{t_j} = Construction area allocated to the zoning parcel after the arrangement

Total participation and allocation construction areas are found by Equation 2. In the proposal approach, the construction precedent before the regulation is determined according to the Regulation on Unplanned Areas, and the construction precedent after the regulation is determined according to the implementation zoning plan.

$$\sum_{i=1}^{n} A_i\, e_i = \sum_{j=1}^{m} A_j\, e_j \tag{2}$$

A_i = Area of the parcel before regularization
e_i = Precedent before adjustment
A_j = Area of the parcel after regularization

e_j = Precedent after adjustment

Since the total participation and allocation values will vary with the zoning plan decisions, the equivalence cannot always be achieved and there will be an increase in the ratio (δ). This ratio is obtained by dividing the total allocation construction area by the total participation construction area as in Equation 3.

$$\delta = \frac{\sum_{j=1}^{m} İA_{t_j}}{\sum_{i=1}^{n} İA_{k_i}} \tag{3}$$

The difference between the total area of the parcels participating in the implementation and the total area of the allocation parcels formed after the implementation meets the public service areas in the regulation area according to the zoning plan. The amount of public service areas is found by Equation 4.

$$\sum A_{kh} = \sum_{i=1}^{n} A_i - \sum_{j=1}^{m} A_j \tag{4}$$

A_{kh} = Public service areas

The proposed method aims to allocate zoning parcels equivalent in size to the pre-application construction area, while at the same time transferring the excess construction area gained through the zoning plan to the public. The amount of land to be transferred to the public ($\sum\Delta$) can be found by both Equations 5 and 6.

$$\sum \Delta = \sum_{j=1}^{m} İ\, A_{t_j} - \sum_{i=1}^{n} İ\, A_{k_i} \tag{5}$$

$$\sum \Delta = (\delta - 1) \cdot \sum_{i=1}^{n} İ\, A_{k_i} \tag{6}$$

In cases where the increase in construction area is large, it may be possible to allocate some of this increase to the parcels that will be affected by the regulation and some of it to the public instead of transferring it to the public. In this case, the value increases to be allocated to the parcels and the public are found by Equations 7 and 8, respectively. The expressions p_p and p_k in the equations denote the sharing ratio of the increase in construction area between the public and the parcels.

$$\sum \Delta_p = \sum \Delta \cdot p_p \tag{7}$$

$$\sum \Delta_k = \sum \Delta \cdot p_k \tag{8}$$

$\sum \Delta_p$ = Construction area to be allocated to parcels
$\sum \Delta_k$ = Construction area to be allocated to the public

The progress payment value of a parcel within the regulation boundary is equal to the sum of the parcel participation value and the value increase amount allocated to the parcel in Equation 10, as given in Equation 9.

$$İA_{h_i} = İA_{k_i} + \Delta_{p_i} \tag{9}$$

$$\Delta_{p_i} = A_{k_i} \cdot (\delta - 1) \cdot p_p \tag{10}$$

$İA_{h_i}$ = Parcel progress payment area after adjustment
$İA_{k_i}$ = Pre-regulation construction area
Δ_{p_i} = Amount of increase in construction area allocated to the parcel

The area of the zoning parcel to be allocated is calculated by proportioning the progress payment construction area calculated for the parcel to the precedent of the zoning building block to be allocated, as given in Equation 11.

$$A_j = \frac{\dot{I}A_{h_i}}{e_j} \tag{11}$$

A_j = Area of zoning parcel to be allocated
$\dot{I}A_{h_i}$ = Parcel progress payment construction area
e_j = Development building block precedent value

Construction progress payment and construction allocation areas should be equal to each other. If the parcel area is not sufficient and this equivalence cannot be achieved, the difference (γ) between the construction progress payment and construction allocation areas found by Equation 12 can be converted into a price (B_i) by multiplying it with the official building unit cost price (M) of that year according to the date of application by Equation 13.

$$\gamma_i = \dot{I}A_{t_i} - \dot{I}A_{h_i} \tag{12}$$

$$B_i = \gamma_i \cdot M \tag{13}$$

According to the proposal method, the areal deduction rate of a parcel is calculated by dividing the allocated parcel area by the participation parcel area as in Equation 14.

$$k_i = 1 - \frac{A_j}{A_i} \tag{14}$$

The suggestion method was applied with a selected pilot area.
Table 1 shows the cadastral parcel areas in the area to be applied according to the method based on the zoning right and the construction precedents according to the Regulation on Unplanned Areas.

Table 1. Participation parcels (Before editing).

Parcel No	Owner	Parcel Area (m²)	Construction Precedent	Construction Area (m²)
1	A	2845.17	0.09	250
2	B	2005.55	0.12	250
3	C	2872.84	0.09	250
4	D	2048.23	0.12	250
5	E	2635.26	0.09	250
Total		12407.05	0.10	1250

The construction areas of cadastral parcels are taken as 250 m² according to Article 63 of the Unplanned Areas Regulation.
The construction areas were found by multiplying the zoning parcel areas formed according to the temporary parcellation planning after the arrangement by the precedent values in the zoning plan Table 2.

Table 2. Participation parcels (After editing).

Building Block/Parcel No	Parcel Area (m²)	Construction Precedent	Construction Area (m²)
7424/101	1494.18	1.00	1494.18
7424/102	845.30	1.00	845.30
7424/103	765.72	1.00	765.72
7424/104	764.31	1.00	764.31
7424/105	799.63	1.00	799.63
7424/106	747.59	1.00	747.59
7424/107	832.45	1.00	832.45
7423/101	1476.65	1.25	1845.81
7423/102	1260.27	1.25	1575.34
7423/103	1279.73	1.25	1599.66
Total	10265.83	1.10	11270.00

Public service areas to be obtained with the implementation;

$\sum A_{kh} = \sum_{i=1}^{n} A_i - \sum_{j=1}^{m} A_j$= 2141.22 m²

The total amount of increase in construction area provided by the implementation zoning plan;

$\sum \Delta$ = 11270.00 – 1250 = 10020.00 m²

The ratio of the total increase in the amount of construction area provided by the implementation zoning plan;

$\delta = 11270.00 / 1250 = 9.016$ is found as.

According to the proposal; the increase of 10020.00 m² of construction area resulting from the implementation of the zoning plan on the land can be given to the public, or it can be given to the owners in a certain proportion and to the public in a certain proportion. In the application made in the regulation area, 1/3 of the construction area increase was allocated to the public (municipality) and 2/3 to the regulated parcels.

$\sum \Delta_p = 10020.00 \cdot \frac{2}{3} = 6680.00$ m²

$\sum \Delta_p =$ Amount of increase in construction area to be provided to the parcels

$\sum \Delta_k = 10020.00 \cdot \frac{1}{3} = 3340.00$ m²

$\sum \Delta_k =$ Amount of increase in the amount of construction area to be acquired for public use

The amount of construction area to which the cadastral parcels that are subject to the regulation will be entitled with the application is expressed as the progress payment construction area. The progress payment construction area is found by adding the amount of construction increase allocated to the parcel to the pre-application construction area of the parcel.

In the application, with the 6680.00 m² construction area increase allocated to the parcels with a total construction area of 1.250 m² before the regulation, zoning parcels with a total construction area of 7930.00 m² were created. 3340.00 m² of construction area was provided to the municipality Table 3.

Table 3. Progress construction areas

Parcel No	Participation Construction Area (m²)	Increase (m²)	Progress Construction Area (m²)
1	250	1336.00	1586.00
2	250	1336.00	1586.00
3	250	1336.00	1586.00
4	250	1336.00	1586.00
5	250	1336.00	1586.00
Owner Total	1250	6680.00	7930.00
Municipality Total	-	3340.00	3340.00
General Total	1250	10020.00	11270.00

Table 4 shows the zoning parcels allocated to the cadastral parcels that entered the application. The differences between the allocation construction areas and progress payment construction areas constitute the allocation progress payment amount.

Equalization fee is calculated by multiplying the allocation progress payment amount by the value (1021 TL/m²) determined for the fourth-class A group buildings of the 2019 Building Approximate Unit Costs to be Used in the Calculation of Architectural and Engineering Service Fees, which is renewed every year. According to the results calculated after the application, the owners of cadastral parcels 1, 3 and 4 are in debtor status, while cadastral parcels 2 and 5 are in creditor status.

The rate of areal deduction in the arrangement area has occurred at different rates on parcel basis due to the value-based land and land arrangement application. 43,83% for cadastral parcel number 1, 37,16% for cadastral parcel number 2, 43,97% for cadastral parcel number 3, 37,52% for cadastral parcel number 4 and 41,29% for cadastral parcel number 5.

The total deduction corresponds to 41.20%. A total of 5112.05 m² has been deducted from the cadastral parcel areas included in the regulation. While 2141.22 m² of the deduction was allocated to public service areas, 2970.83 m² was allocated on behalf of the municipality.

In addition, the arrangement area was distributed according to the existing area based LR method. Regulation common share rate was found as 17,25%. While the allocation values were 2354,15 m² for the cadastral parcel numbered 1, it was found as 1598,17 m² according to the value-based land and land arrangement method. While it was 1659,43 m² for cadastral parcel number 2, it was found as 1260,27 m² according to the value-based land and land arrangement method. While it was 2377,05 m² for cadastral parcel number 3, it was found as 1609,61 m² according to the value-based land and land arrangement method. While it was 1694,74 m² for cadastral parcel number 4, it was found as 1279,73 m² according to the value-based land and land arrangement method. For cadastral parcel number 5, it was found as 1547,22 m² according to the value-based land and land arrangement method, while it was 2180,46 m².

Table 4. Allocation table.

Participation					Progress Payment				Allocation					
Parcel No	Parcel Area (m²)	Owner	Construction Area (m²)	Construction Area (m²)	Building Block/Parcel No	Parcel Area (m²)	Owner	Precedent	Construction Area (m²)	Allocation – Participation (m²)	Allocation - Progress Payment (m²)	Equalization (TL)	Outage Amount (m²)	Deduction Rate (%)
					7424/103	765.72	A	1.00	765.72					
1	2845.17	A	250.00	1586.00	7424/107	832.45	A	1.00	832.45	1348.17	12.17	12426.05	1247.00	43.83
					Total	1598.17			1598.17					
2	2005.55	B	250.00	1586.00	7423/102	1260.27	B	1.25	1575.34	1325.34	-10.66	-10885.94	745.28	37.16
					7424/104	764.31	C	1.00	764.31					
3	2872.84	C	250.00	1586.00	7424/102	845.30	C	1.00	845.30	1359.61	23.61	24106.29	1263.23	43.97
					Total	1609.61			1609.61					
4	2048.23	D	250.00	1586.00	7423/103	1279.73	D	1.25	1599.66	1349.66	13.66	13949.89	768.50	37.52
					7424/106	747.59	E	1.00	747.59					
5	2635.26	E	250.00	1586.00	7424/105	799.63	E	1.00	799.63	1297.22	-38.78	-39593.90	1088.04	41.29
					Total	1547.22			1547.22					
					7424/101	1494.18	M	1.00	1494.18	1494.18	-	-	-	-
-	-	M	-	3340.00	7423/101	1476.65	M	1.25	1845.81	1845.81	-	-	-	-
					Total	2970.83			3340.00	3340.00	-	-	-	-
Total	12407.05		1250.00	11270.00		10265.83			11270.00	10020.00	0.00	0.00	5112.05	41.20

M: Municipality

2.1 Debiting the value differences arising from the length of the parcel frontage and the width of the road frontage

Taking into account the frontage lengths and road widths of the zoning parcels after the arrangement, the resulting value differences were debited as "road debt" [10]. The road debt amounts were evaluated as progress payment construction area according to the method based on development rights and included in equalization. In the distribution model based on development rights, while the value differences arising from the increase in precedent are taken into consideration, road widths and frontage lengths are not evaluated. As the precedents of the development building blocks may be different, the road widths surrounding the development building blocks may also be different.

According to the frontage lengths and road widths of the regulation area, the weighted frontage length is calculated for each zoning parcel separately by Equation 15.

$$AC = \frac{\sum_{i=1}^{n} YG_i \cdot PC_i}{\sum_{i=1}^{n} YG_i} = \left(\frac{YG_1 \cdot PC_1 + YG_2 \cdot PC_2 + YG_3 \cdot PC_3}{YG_1 + YG_2 + YG_3} \cdot n\right) \quad (15)$$

AC = Weighted frontage length
YG = Road width
PC = Parcel frontage length
n = Number of frontages

At the same time, since the road widths of each parcel cannot be the same, weighted road widths are calculated by Equation 16.

$$AYG = \frac{YG_1 \cdot PC_1 + 2 \cdot YG_2 \cdot PC_2 + 3 \cdot YG_3 \cdot PC_3}{\sum_{i=1}^{n} PC_i} \quad (16)$$

AYG = Weighted road width

According to the suggestion of [11]; the multiplication coefficient of the widest road was taken as 1, and the weights of the road widths were determined by successively increasing towards the narrowest road.

The overall weighted road width on building block basis was found by Equation 17.

$$GAYG = \frac{\sum_{i=1}^{n} YG_i \cdot PC_i}{PC_i} \quad (17)$$

GAYG = General weighted road width

Then, the weighted road debt is calculated for each zoning parcel using Equation 18. Since the amounts of receivables or payables are assessed on a building block basis, the average road debt for each zoning building block is calculated. The difference between the weighted road debt and the average road debt calculated on a building block basis will constitute the actual road debt.

$$Road\ Debt = \frac{AC_i(AYG_i - GAYG)}{10} \quad (18)$$

According to the result obtained, negative values are considered as creditor while positive values are considered as debtor. The debts and credits of the parcels on building block basis should be equal to each other. Thus, it will be mathematically controlled.

2.2 Evaluating the road debt amounts as progress payment construction area and including them in equalization

In land use right-based land use applications, the value differences that occur according to the precedent values that change with the zoning plans are not sufficient for equalization alone. As the precedents may differ in zoning building block the frontage lengths and frontage road widths of the zoning parcels formed after the arrangement may also differ. A more equitable distribution will be ensured with the approach of mathematically evaluating the road debt as the progress payment construction area according to the method based on the development right and including it in the equalization. Thus, it can be realized that the right holders gain the same value.

The inclusion of the road debt amounts in the equalization is achieved by using the generated Equation 19.

$$YBD = (Y_b \cdot E) \quad (19)$$

YBD = Road debt equalization
Y_b = Amount of road debt
E = Precedent
M = Construction cost

For the construction cost (M), the value determined for the year 2019 (1021 TL/ m^2) was taken into consideration based on the Building Approximate Unit Costs schedule, which was used in the calculation of the right of way-based equalization cost.

With the Equation 19, the road debt amounts of the zoning parcels in the regulation area are evaluated together with the right of way construction area and included in the equalization.

In summary; by adding the value differences according to the parcel façade lengths and road widths to the equalization amounts, a more equitable approach was intended to be created for the immovable owners. Total equalization calculation is given in Table 5.

2.3 Area based distribution of the regulation area

In the area designated as a working area, the regulation partnership share rate to be applied to all parcels with the regulation made according to the provisions of Article 18 of the zoning law numbered 3194 was found to be 17.25%.

3. Results and Conclusion

Due to the uncertainty of the parameters affecting the value of the parcel in Türkiye and the lack of a good valuation system, it was tried to ensure equivalence by considering the parameter of the construction area deserved on the parcel, which affects the value most in land and land arrangement applications.

Table 5. Total equalization table.

Participation	Progress Payment			Allocation						
Parcel No	Construction Area (m^2)	Building Block/Parcel No	Construction Area (m^2)	Owner	Precedent	Allocation - Progress Payment (m^2)	Equalization (TL)	Road Debt (m^2)	Road Debt Equalization (TL)	Total Equalization (TL)
		7424/103	765.72	A	1.00		5953.60	-17.99	-18367.79	
1	1586.00	7424/107	832.45	A	1.00	12.17	6472.44	-15.38	-15702.98	-21644.72
		Total	1598.17				12426.05		-34070.77	
2	1586.00	7423/102	1575.34	B	1.25	-10.66	-10885.94	-25.95	-33125.05	-44010.99
		7424/104	764.31	C	1.00		11446.67	4.73	4829.33	
3	1586.00	7424/102	845.30	C	1.00	23.61	12659.62	-14.85	-15161.85	13773.77
		Total	1609.61				24106.29		-10332.52	
4	1586.00	7423/103	1599.66	D	1.25	13.66	13949.89	10.29	13135.25	27085.14
		7424/106	747.59	E	1.00		-19131.09	-18.79	-19184.59	
5	1586.00	7424/105	799.63	E	1.00	-38.78	-20462.81	5.87	5993.27	-52785.22
		Total	1547.22				-39593.90		-13191.32	
		7423/101			1.25		-	15.66	19989.80	
-		7424/101		Municipality	1.00		-	56.41	57594.61	77584.41
		Total					-		77584.41	
Total						0.00	0.00	0.00	0.00	0.00

Zoning parcel allocation was made according to the construction area deserved on the parcel. In addition, the road debt formed according to the parcel frontage lengths and road widths after the regulation was included in the equalization and a more equitable distribution was tried to be created.

There are many parameters affecting the parcel value other than the construction area and road debt. However, it is thought that these parameters may show regional differences. For this reason, other parameters affecting the value of immovable property are not included in the application since they are difficult to determine.

With the zoning plans prepared, the whole of the rent generated can be brought to the public, or a certain proportion can be brought to the right holders and a certain proportion to the public. This will ensure that the distribution is made in a fair manner.

As in the current legislation, the rule of allocating a parcel from its own location or close to it is provided in the application method. This will prevent value differences due to location. If there is a difference between the allocation construction area and the progress payment construction area of a zoning parcel formed by the regulation, the allocation progress payment difference is found as a price according to the building approximate unit costs table renewed every year.

While the cadastral parcel areas totaled 12407.05 m^2, an average area deduction of 41.20% was made from the parcels, with each parcel having a different area deduction. The highest deduction rate was applied to cadastral parcel 3 with 43.97%, while the lowest deduction rate was applied to cadastral parcel 2 with 37.16%. Of the 5112,05 m^2 area obtained as a result of the deduction; 2970,83 m^2 was created as municipal parcel and 2141,22 m^2 was allocated for public service areas.

According to the area-based distribution model in the current legislation, the rate of regulatory common share was found to be 17.25%. According to the implementation model based on zoning rights, the areal deduction rate was 41.20%. In addition, when the zoning parcels allocated on behalf of the municipality are taken into consideration, the results will be an indication that the increase in value generated by the application is transferred to the public.

The comparison of the allocation amounts after the implementation of LR based on zoning right and area-based LR is given in Table 6.

Table 6. Allocation comparison according to application methods.

Parcel No	Area Based LR		Zoning Right Based LR	
	Before Editing (m^2)	After Editing (m^2)	Before Editing (m^2)	After Editing (m^2)
1	2845.17	2354.15	2845.17	1598.17
2	2005.55	1659.43	2005.55	1260.27
3	2872.84	2377.05	2872.84	1609.61
4	2048.23	1694.74	2048.23	1279.73
5	2635.26	2180.46	2635.26	1547.22

Although the rule of allocation to the parcel from its location is valid in the implementation of land and land arrangement based on development rights, the length of the frontage of the parcel and its width according to the roads it fronts creates a value difference for the parcels. For this reason, the length of the parcel's façade and the width of the roads that the façades face and the amount of road debt incurred with the application based on the development right were evaluated together in the field study.

The frontage lengths and road widths of the zoning parcels were found separately and the road debt of the parcels was calculated. The results were evaluated as the progress construction area according to the principle of development right and the total equalization values of the parcels were found. According to the total equalization results calculated after the application; the owner of cadastral parcel number 1 is in a creditor status of 21644,72 TL, the owner of cadastral parcel number 2 is in a creditor status of 44010,99 TL, the owner of cadastral parcel number 3 is in a debtor status of 13773,77 TL, the owner of cadastral parcel number 4 is in a debtor status of 27085,14 TL, and the owner of cadastral parcel number 5 is in a creditor status of 52785,22 TL. In addition, the municipality has to pay 77584,41 TL to the owners for 7423 block 101 parcel and 7424 block 101 parcel, which were acquired and allocated to the municipality.

LR applications, which are one of the methods of reflecting zoning plans to the land in a comprehensive manner, are carried out in accordance with the provisions of Article 18 of the Zoning Law No. 3194. The distribution method based on area creates legal and technical problems and is constantly criticized.

In area-based LR applications, the parcel values before the arrangement and the parcel values after the arrangement are not taken into consideration. In addition, the deduction of the regulation partnership share from the cadastral parcels in proportion to their area is not parallel to the increase in value after the implementation. Although this situation leads to value differences, it does not change the value of the parcels within the regulation boundary at the same rate. Considering the location and characteristics of the parcels, the value parameters affecting the parcel values before and after the implementation should be determined and evaluated according to objective methods.

The value-based LR method stands out as it saves the value differences that will occur after the regulation in urban areas to the public and protects constitutional equality.

It is considered that implementing land and land arrangement with a value-based method is a more-fair approach for the right holders. In value-based land and land arrangement applications, it is desired that the parcel values entering the arrangement should be parallel to the values after the arrangement. The increase in value should be a gain for the public. There are many parameters affecting the parcel value. Each parameter should be evaluated for a proposal approach that will be accepted by practitioners and society. However, the uncertainties experienced in the valuation in our country make the applicability of the method difficult. Many parameters affecting the parcel value show regional differences and make parameter selection difficult. At the same time, differences in market conditions make it difficult to control the unit values of immovable properties as they lead to speculation.

There are many studies on the adaptation of the value-based LR application to Türkiye. However, there are serious deficiencies in valuation, which is the main point of the application. Non-objective approaches to valuation will bring many technical and legal problems even if the country has a good valuation system.

In this study, the idea of using the parameter expressed as zoning right (total construction area), which directly affects the value, alone is evaluated in terms of applicability in Türkiye and explained with a field study.

The proposal method provides the rule of allocating parcels from the same or close to the same place as in the existing LR applications. In addition, the construction areas of the parcels before the regulation and the construction areas of the parcels after the regulation are equalized and the increase in value gained with the zoning plan is gained to the public.

The value differences arising from the frontage lengths and road widths of the zoning parcels formed after the regulation, which are considered as a deficiency of the application method based on the zoning right, are included in the application. The value expressed as road debt in the application was found on parcel basis. The road debt amounts were evaluated as progress payment construction area and included in the equalization.

In summary, the application of a method based on development rights instead of area-based distribution in LR applications will ensure a fair distribution for immovable owners, transfer the rent generated after the regulation to the public and prevent land speculation.

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Author contributions

Mehmet Koçoğlu: Investigation, Methodology, Writing. **Mehmet Ertaş:** Conceptualization, Writing-Reviewing and Editing. **Mevlüt Uyan:** Reviewing and Editing.

Conflicts of interest

The authors declare no conflicts of interest.

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