

Article

A Technical Proposal for the Implementation of Transfer of Development Rights (TDR) on Preserved Historic Buildings in Turkey

Yunus Konbul * and Mustafa Yanalak 

Department of Geomatics Engineering, Faculty of Civil Engineering, Istanbul Technical University, Maslak, Istanbul 34469, Turkey; yanalak@itu.edu.tr

* Correspondence: yunus.konbul@alanya.edu.tr

Abstract: Buildings that have cultural and historical significance are very important elements of our living spaces and they must be protected by public authorities. However, the preservation of these buildings prevents their landowners from using their development rights and causes economic losses. If those losses are not compensated, it results in social injustice. Leaving this problem unsolved makes historic buildings a target for arson, facilitates the destruction of unregistered (unlisted) historic buildings for redevelopment with a higher density. The traditional methods, namely expropriation and property exchange, generally fail to compensate those development losses. However, the method of transfer of development rights (TDR) can be a good option for this task in Turkey as well. Although there have been some important legislative actions, an “implementing regulation” could not be enacted so far. In this study, we attempt to develop a step-by-step methodology for the implementation of a TDR program from the perspective of land management. The methodology introduced in this paper is also tested for its validity by interviewing 18 professionals from related sectors and all the interviewees agreed on them with minor suggestions. The results derived from this study could benefit not only property owners, but also overall preservation efforts in the country.

Keywords: transfer of development rights (TDR); land registry; land management; preservation of buildings; historic buildings; development restriction; development loss; floor area; Turkey



Citation: Konbul, Y.; Yanalak, M. A Technical Proposal for the Implementation of Transfer of Development Rights (TDR) on Preserved Historic Buildings in Turkey. *Buildings* **2022**, *12*, 778. <https://doi.org/10.3390/buildings12060778>

Academic Editors: Liyin Shen, Jorge Ochoa and Haijun Bao

Received: 7 May 2022

Accepted: 1 June 2022

Published: 7 June 2022

Publisher's Note: MDPI stays neutral with regard to jurisdictional claims in published maps and institutional affiliations.



Copyright: © 2022 by the authors. Licensee MDPI, Basel, Switzerland. This article is an open access article distributed under the terms and conditions of the Creative Commons Attribution (CC BY) license (<https://creativecommons.org/licenses/by/4.0/>).

1. Introduction

Buildings that have cultural and historical significance are very essential elements of our living spaces. Among many other benefits, they add value to urban development with aesthetics, and they also connect us to our past and provide us with a sense of communal or national continuity [1,2]. However, these valuable buildings are usually under the threat of demolition to be redeveloped to a higher density for an economic return, i.e., for development gain. This is not a surprise in the development business where profits can be extremely high. Therefore, cultural heritage must be protected by public authorities for the sake of public interest, instead of abandoning them to their fate (Figure 1).

In Turkey, historic buildings are registered (or listed) and preserved by the hands of the State [3]. The preservation process of cultural heritage in the country can be considered successful with its powerful legislation and uncompromising preservation boards. However, if we look at the situation from the perspective of the owners of these buildings, it is a problematic issue in Turkey and also worldwide [4]. Because in the current practice, after the decision of preservation, the property rights of landowners are restricted by public authorities without any compensation.

To better understand the current building preservation processes in Turkey, the situation can be explained in an example neighborhood. According to the development plan of this imaginary neighborhood, there is a maximum two-story building limitation. It means that the owner of a land parcel in this area can build up to a maximum of two-story.

However, one of the buildings in the neighborhood is registered as “historic landmark” by the Preservation Board and it is now under the protection of the law. The owner of this property can no longer demolish or rebuild it. Even minor improvements, such as a simple roof repair, must be asked for permission from the Preservation Board [3]. In this neighborhood, all the buildings, including the historic building, are two-story. However, the problems start when the municipality council changes the two-story density rule to three-story. This means that the landowners are now allowed to build up to three-story on their lots (Figure 2).



Figure 1. A deteriorated historic building in Turkey.

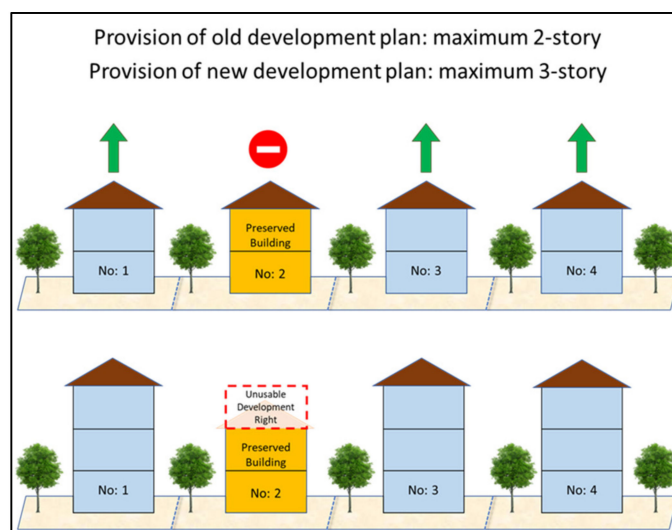


Figure 2. Unequal effects of restriction.

Now, all the landowners can benefit from this density increase by constructing larger buildings and enjoy the large profit stemming from the development gain, except the owner of the restricted building. This is obviously unfair. If there is no compensation for this loss, the landowner of the historic building is subject to injustice [5,6]. Unfortunately, conventional compensation methods generally do not work in Turkey [7–10]. This compensation problem must be solved, because firstly the current practice gives an inconvenient message that the landowners of these buildings are punished by the public authorities for not demolishing their buildings earlier than the preservation decision of the Boards. Secondly, the owners of unregistered (or unlisted) heritage buildings that are not restricted yet should hurry up to demolish them before Preservation Boards restrict them. In addition to it, because of such economic reasons, those buildings can also be neglected by their

owners and be left for deterioration until they are demolished themselves or they are subject to incidents of arson with the hope that the property may be taken out of the list and become unrestricted again. Leaving this problem unsolved obviously damages the whole preservation effort.

As a candidate to solve the problem and end this injustice to support the overall preservation attempts, the transfer of development rights (TDR) method is analyzed in this article which has been used in many different countries for a few decades [11–14]. A technical and procedural methodology is proposed in the following sections for the implementation of TDR according to the specifications in Turkey, and it can be an example for other countries worldwide that have similar land management problems.

The paper is structured as follows: After the introduction section, the overall TDR concept and its background is explained by giving examples of economic losses of restricted property owners in Alanya, Antalya, Turkey in Section 2. Insufficient compensation methods of today which do not solve the problem are explained in Section 3. An introduction of the method of transfer of development rights (TDR) with a comprehensive literature review are given in Section 4. Previously enacted laws and regulations about TDR in Turkey that still lack an “implementation regulation” are explained in Section 5. The proposed implementation methodology for TDR is given in Section 6 with detailed technical steps. The interviews with professionals from relevant sectors regarding the applicability of the methodology in Turkey are discussed in Section 7, and finally the discussions and conclusions are provided in Section 8.

2. Examples of Economic Loss Due to Uncompensated Restrictions

In order to picture the contradiction, the development and economic loss of some real-life example properties in Alanya County of Antalya Province in Turkey are shown below.

Example 1:

Area: Saray Neighborhood (Coordinates: 36°32′55.8″ N; 31°59′33.5″ E) (Figure 3).

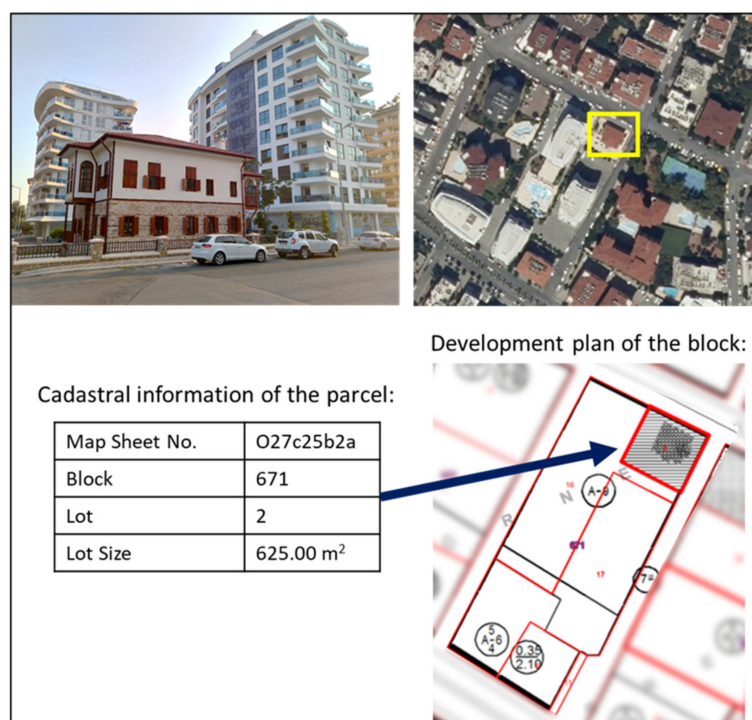


Figure 3. Example of a historic private residence in Alanya. Top left: A side-view of the building (June 2019); top right: A satellite image of the neighborhood; bottom right: development plan of the block; bottom left: cadastral information of the parcel. (For further information, please see Data Availability Statement section).

The historic building is located in the parcel No. 671/2 (meaning Lot 2 of Block 671) with the size of 625.00 m² in the northeastern part of the block (Figure 3). The building is listed as “cultural heritage” by the Preservation Board and the preservation decision was applied on the development plan by marking the lot with parallel lines. With this decision, the building cannot be demolished, and the lot cannot be redeveloped.

In order to calculate the economic loss caused by the restriction decision, the development rights of the other lots in the same block should be taken into account which the owner of the restricted land cannot use equally. According to the development plan, lots on the southern part have five-story building permission, with a floor-area-ratio (FAR) of “2.10”. It means that the owner of the parcel can construct a building with a density calculated by multiplying the size of the parcel by “2.10”. If there was no restriction, this “2.10” FAR would normally be applied to the restricted lot as well.

Therefore, if we copy this development rule (five-story, FAR: 2.10) for the parcel of the historic building, the parcel would normally have had 625.00 m² × 2.10 ≈ 1313 m² (results are generally rounded for simplicity in this paper) total building density in a five-story building. However, the total floor area used in the current historic building and its height are fewer than those. The historic building is a three-story building. To calculate the current total floor area of this building, the basement coverage of the building is measured from a satellite image and multiplied by the number of floors, which is three in this example. It should be noted that the total floor area of the historic building can be determined much more precisely, however this study focuses on the TDR method, rather than determining the most precise calculation of the total floor area of a building. Therefore, a rounded number is sufficient for the purpose of this research. According to this, the total floor area of the building is ~495 m². Now, if this current usage (~495 m²) is subtracted from the development potential of the lot as calculated above (~1313 m²), we can find the unusable/restricted/blocked floor area on the lot: the landowner is deprived of approximately 1313 – 495 = 818 m² of floor area.

In order to calculate the economic value of this unusable floor area of 818 m², an internet search for the sales prices of similar real estate in the neighborhood was undertaken. The prices per m² (Turkish Liras/m²) in the area start from 5000 up to 14,000 Turkish Liras (TL) according to their luxurious features (December 2020 conditions). If we approach it extremely moderately and choose the bottom value of only 5000 TL, the market value of the restricted floor area of the lot would be 818 m² × 5000 TL = 4,090,000 TL. However, this figure is not the direct economic loss of the landowner, it should be adjusted by subtracting the construction costs. If we calculate the construction cost of a building of 818 m² according to the 2020 average construction costs table published by the Ministry of Environment and Urbanization [15] which is 1450 TL/m² for residential buildings, we reach approximately 818 m² × 1450 TL = 1,186,100 TL for the building. When we subtract it from the market value that we calculated earlier, 4,090,000 TL – 1,186,100 TL = 2,903,900 TL (~\$380,590; USD/TL: 7.63) is found. This means that the owner of the historic building is deprived of almost 3 million Turkish Liras. An overview of these calculations can be seen in Table 1. This is a very large amount of money for a municipality to be paid for only one landowner. In addition, there are many of them.

Table 1. Overview of the calculations of Example 1.

(a) Parcel Size		625.00	m ²
(b) FAR		2.10	
(c) Total Development Right (a × b)	Approx.	1313	m ²
(d) Current Total Floor Area of Hist. Building	Approx.	495	m ²
(e) Restricted Floor Area (c – d)	Approx.	818	m ²
(f) Average Market Value per m ²	Approx.	5000	TL/m ²

Table 1. *Cont.*

(g) Market Value of Restr. Floor Area (e × f)	Approx.	4,090,000	TL
(h) 2020 Average Construction Cost (ACC)		1450	TL/m ²
(i) ACC of Restricted Floor Area (e × h)	Approx.	1,186,100	TL
(j) Owners' Total Economic Loss (g – i)		2,903,900	TL
(l) (j) in US Dollars (US/TL: 7.63)	Approx.	380,590	USD

Example 2:

Area: Kadıpaşa Neighborhood (Coordinates: 36°32'54.8" N; 31°59'40.5" E) (Figure 4).

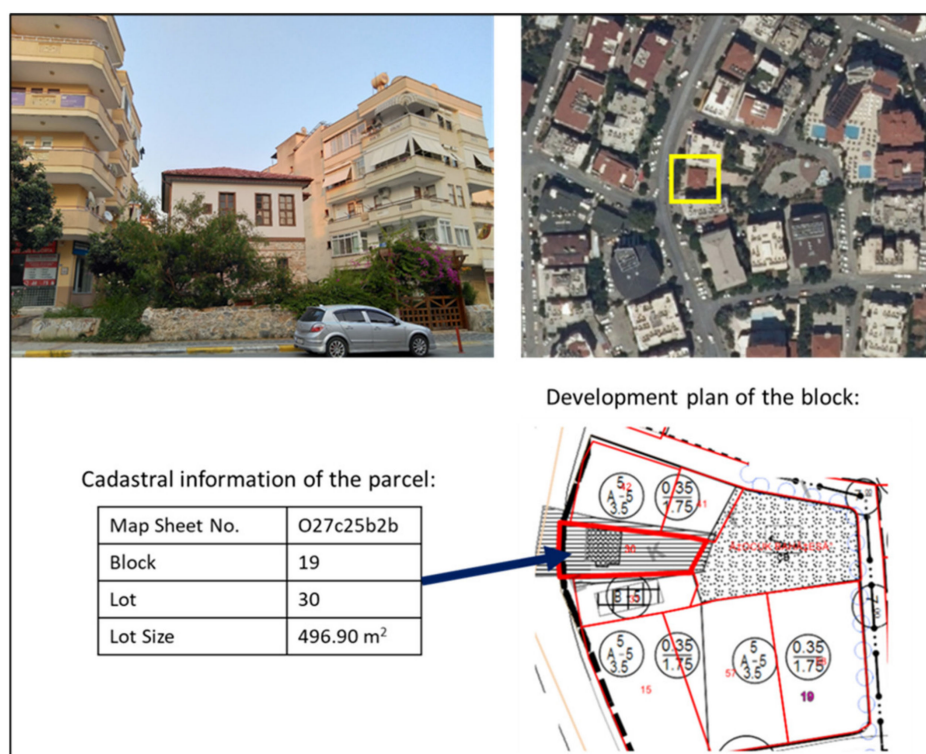


Figure 4. The second example of a historic building. Private residence (photographed in June 2019).

This historic building is located on the parcel No. 19/30. The construction rule for the block is maximum five-story and FAR: "1.75". The size of the restricted lot is 496.90 m² and marked by parallel lines in the development plan (Figure 4). The current historic building has approximately 184 m² total floor area (determined as explained in the first example above). If it was not restricted, the total development right (total floor area) of the parcel would be 496.90 m² × 1.75 ≈ 870 m². Therefore, the landowner is not allowed to use approximately 870 – 184 m² = 686 m² of floor area on the lot.

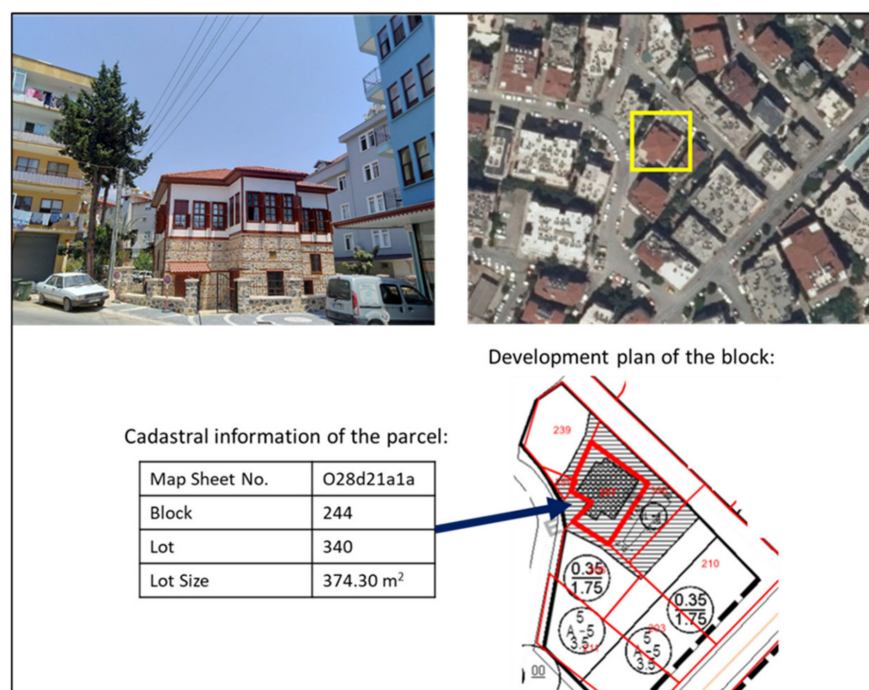
According to the real estate sales prices in the area, the market value is minimum 5000 TL/m². If we accept this minimum number again, the market value of the restricted floor area of 686 m² is worth 686 m² × 5000 TL = 3,430,000 TL. The construction cost of the specified floor area would be around 686 m² × 1450 TL/m² = 994,700 TL. If this number is subtracted from the market value, the total economic loss of the landowner is approximately 3,430,000 TL – 994,700 TL = 2,435,300 TL (~\$319,174; USD/TL: 7.63), listed in Table 2.

Table 2. Overview of the calculations of Example 2.

(a) Parcel Size		496.90	m ²
(b) FAR		1.75	
(c) Total Development Right (a × b)	Approx.	870	m ²
(d) Current Total Floor Area of Hist. Building	Approx.	184	m ²
(e) Restricted Floor Area (c – d)	Approx.	686	m ²
(f) Average Market Value per m ²	Approx.	5000	TL/m ²
(g) Market Value of Restr. Floor Area (e × f)	Approx.	3,430,000	TL
(h) 2020 Average Construction Cost (ACC)		1450	TL/m ²
(i) ACC of Restricted Floor Area (e × h)	Approx.	994,700	TL
(j) Owners' Total Economic Loss (g – i)		2,435,300	TL
(l) (j) In US Dollars (US/TL: 7.63)	Approx.	319,174	USD

Example 3:

Area: Şekerhane Neighborhood (Coordinates: 36°32'47.0'' N; 32°00'14.9'' E) (Figure 5).

**Figure 5.** The third example of historic buildings. Private residence (photographed in July 2019).

The historic building is located on the parcel No. 244/340 and the size of the parcel is 374.30 m². The current building's total floor area is around 525 m². The FAR value for the block is "1.75" in the development plan (Figure 5). If there was no restriction, the lot would have 374.30 m² × 1.75 ≈ 655 m² total floor area potential. The restricted floor area of the landowner is approximately 655 m² – 525 m² = 130 m². The market value of a m² in the area is accepted as 5000 TL/m² like in the previous examples. The total market value of the unused floor area would be 130 m² × 5000 TL = 650,000 TL. The construction cost of the unusable floor area would be 188,500 TL (130 m² × 1450 TL/m²). If we subtract it from the market value of the unused floor area, 650,000 TL – 188,500 = 461,500 TL (~\$60,485; USD/TL: 7.63) is the total economic loss of the owner of the preserved building (Table 3). More examples can also be given; however, the above examples are sufficient to understand the overall situation.

Table 3. Overview of the calculations of Example 3.

(a) Parcel Size		374.30	m ²
(b) FAR		1.75	
(c) Total Development Right (a × b)	Approx.	655	m ²
(d) Current Total Floor Area of Hist. Building	Approx.	525	m ²
(e) Restricted Floor Area (c – d)	Approx.	130	m ²
(f) Average Market Value per m ²	Approx.	5000	TL/m ²
(g) Market Value of Restr. Floor Area (e × f)	Approx.	650,000	TL
(h) 2020 Average Construction Cost (ACC)		1450	TL/m ²
(i) ACC of Restricted Floor Area (e × h)	Approx.	188,500	TL
(j) Owners' Total Economic Loss (g – i)		461,500	TL
(l) (j) In US Dollars (US/TL: 7.63)	Approx.	60,485	USD

3. Insufficient Traditional Compensation Methods for the Economic Loss of Landowners

There are regular compensation methods for the economic loss of the landowners, namely *expropriation* and *property exchange*. Expropriation is a well-known and common approach. Basically, the real estate is purchased by a public authority by paying the market value of it [16]. However, since real estate prices are very expensive, the expropriation method is often out of question. In addition, it can be considered that the expropriation method may be used for only the restricted part, instead of buying the whole real estate. This way, the parcel and the building stay with the original owner, and the authority pays only for the economic loss arising because of the restriction (as calculated for the three buildings in the previous section). However, paying only for the restricted development rights of those buildings is very expensive as well. Even with the extreme minimization of the market values in this paper, the total economic loss for only these three examples alone is 5,800,700 TL (~\$760,249; USD/TL: 7.63) in 2020 conditions. Since there are hundreds of restricted historic and cultural buildings in the town, the money to be paid is so large that public finances of any authority will have a problem at handling such an expense.

In addition to this, expropriation is the method of a public authority to purchase a real estate to “use” for public interest. In our case, if only the economic losses of the landowners are paid instead of purchasing the whole estate, that large amount of money would be used for something that does not provide a direct benefit for the public. In other words, those properties would not be owned by the public and could not be used as a park, green area, public facility, or something else. The money would be paid for something “invisible”. We must admit that it is a politically discouraging situation. In fact, mayors or other decision-makers would like to use their limited annual budgets for the things that can be directly “used” by the citizens, rather than something made “out of thin air”. Therefore, it is understandable that it is difficult for administrations worldwide to use the expropriation method for the restriction of development rights. Public finances usually cannot afford it. Even if they can afford, that money can be used in alternative ways that are more necessary and appreciated by citizens, such as roads, water systems, parks, or other social or physical infrastructure that people can directly benefit from. Spending limited public money on invisible “air rights” and complaining about the broken sewage system of the city would be ironic.

The second method is the property exchange. Basically, the State swaps unused public land for a private property. In this way the public authority does not pay any cash money. However, the downside is that it has the risk of impoverishing public authorities in terms of owning public lands because the lands that they exchange must be equal in value. Remembering that state lands are generally outside city centers and in rural areas, those lands are almost always cheaper than the urban lands. In order to reach the value of the urban lands, larger and larger sizes of rural lands must be allocated for the exchange. It

can eventually cause the State to lose very large amounts of land. Therefore, this method is also ineffective in most cases. *Land readjustment* (LR) [7,17] could also be counted here. However, LR programs can be useful in vacant lands such as restricted archeological sites. With LR, the landowner can be freed from the restriction by shifting the landownership to a close-by unrestricted non-archeological area, and then the restricted archeological parcel can be transformed into a public area accordingly. However, LR cannot be used on restricted parcels with preserved buildings because buildings physically cannot be moved to somewhere else and the ownership of building and the ownership of the land beneath cannot be separated, principally. The building and the land parcel are strongly tied to each other.

However, there is a third option. It has been practiced in various countries, stood the test of time and can be a good option for Turkey as well: *transfer of development rights* (TDR, or in Turkish *imar hakkı transferi* or *imar hakkı aktarımı*). It is widely accepted that the TDR method has never been used in Turkey, or at least a recorded transfer case could not be found so far [18–22]. Therefore, this paper attempts to offer a step-by-step implementation procedure for TDR in Turkey in compliance with the legal, organizational, professional, and traditional specifications of the country.

From a wider perspective, there are many different areas to use the TDR method such as reducing urban sprawl [23,24], urban regeneration [25], preservation of agricultural areas [26,27], natural areas [28], historic sites and built heritage [18,29,30] which are all causing development restrictions for different reasons. However, the effort to evaluate TDR in all these areas in a single paper would eventually complicate the understanding. It is true that the TDR method is required in all the above-mentioned areas, however if it is a new approach in a country, which is the case in Turkey, it can be a better idea to evaluate it on a less complicated parcel-based field (a similar approach was taken in the US, New York's early TDR programs were implemented in small and defined areas [29] before going for larger areas). Thus, the preservation of historic buildings (parcel-based rather than area-based) is preferred as the case study in this paper. This choice is based on the following facts that, firstly, the economic and physical loss can easily be seen and calculable in this field. Secondly, we deal directly with the parcels one-by-one, rather than dealing with multiple parcels in large areas. Thirdly, the problem is very prevalent. A solution, which is the TDR method proposed in this study, can immediately find its place in the everyday life of people. In addition, it is probably not a coincidence that the modern TDR method was first introduced for the preservation of "landmark buildings" in the US [11,29].

4. Transfer of Development Rights (TDR) and the Literature Review

A "development right" can theoretically be explained as a government's license to build on a land parcel (governmental grant); or it is the government's restriction on a pre-existing right to develop a land (allowable density). Either way, it is simply the "right to build" on a land parcel [31]. Pizor (1986) explains it in another way as the difference between the existing use of a parcel and its "potential use". The latter explanation provides practical implications as it facilitates the idea of separating the land and its use in the TDR concept.

Development rights, by nature, provide a large amount of economic gain to their owners. Therefore, they should be implemented equally among landowners. For example, giving a three-story building permission for a parcel and completely forbidding building on the adjacent parcel without any reason will cause economic imbalance and results in social injustice. Normally, equal development potential should be allocated to everyone in the same zone by municipalities so then the development gain can be equalized [13]. However, some real estate owners are prevented by public authorities from using their development rights because of preservation decisions and the problems start right there. If there is no compensation for the loss (financially, or floor-area-wise), it results in unfairness. As explained in the previous section, the traditional compensation methods do not work properly. In order to solve this problem, the method of *transfer of development rights* (TDR,

also called as *transferable development rights*) can be used. With TDR, the landowners of restricted parcels (“sending parcels”) are allowed to transfer their unused/blocked/frozen development rights to be used on other land parcels (“receiving parcels”) [4]. The sending and receiving parcels both can be owned by the same person or can be owned by different persons as well. It means that the restricted landowners can also sell their unused development rights to someone else [29,32]. When a development right is transferred on another parcel, the transferred amount is added on top of the original development right of the receiving parcel as a bonus density [33]. For example, if the receiving parcel normally has three-story building permission, an incoming TDR of one-story is added on top of it and make it a four-story building permission (Figure 6).

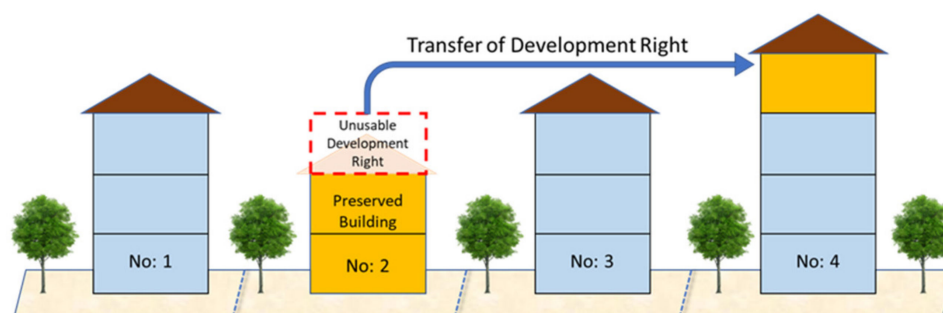


Figure 6. Transfer of restricted floor area onto another parcel (from building No: 2 to building No: 4).

It is widely accepted that TDR was first introduced in the United States and although it can be traced back to as early as 1916, a complete TDR process as understood today was first formalized in the 1960s for the preservation of historic buildings in New York City [13,29,34,35], which is in compliance with the title of this paper. Since then, together with the usage in different fields such as the preservation of agricultural lands and natural areas, large areas of land have been preserved in the US through TDR programs [11,36].

The US is not the only country where TDR has been implemented. The concept was also imported and used by other countries for various needs such as the creation of public service areas, urban regeneration and preservation of natural areas in Italy [13,37], reduction of urban growth in Germany [38], protection of agricultural landscape and forest expansion in the Netherlands [39,40], striking a balance between agricultural lands and urban development in China [5,6,41,42], and more [28,43].

In the study by Aliefendioğlu et al., (2017), the authors emphasize that conventional compensation methods do not work and they propose the TDR method for the depopulation of an area under disaster risk in Van City in Turkey. The paper analyzes the TDR method according to the real estate values in the area. Guzle et al., (2020) analyze the TDR method in a large preservation area (248 hectare) in the center of Izmir City in Turkey and examined a potential receiving area to make the transfers to. However, in our paper, TDR is analyzed for the conservation of parcel-based historic buildings, rather than large preservation sites. The authors think that it can be the starting point to implement TDR in a country because of pragmatic reasons, such that they can function as testing laboratories. It can be much easier to handle the processes in parcel-based programs; easier to spot, stop and correct mistakes and errors very locally without the risk of losing control and causing larger damages; on the other hand, successful applications can easily be transferred and employed in other programs and fields, such as in urban regeneration projects which is also a hot topic in the country [44].

When a restricted development right will be transferred, some valid concerns arise. One of the important questions is “where will the receiving area be?”. Is it okay to transfer the development right to anywhere in the city, or should there be a specific transfer zone? Needless to say, the receiving area must have an infrastructural capacity for the incoming density and urban aesthetics should be cared for. Therefore, transferring “from where to where” is a valid question. A major principle is that the “sending area” and “receiving

area" should be socio-economically compliant as much as possible. From this point of view, it is acceptable that the best fitting area for the sending area is the area itself. This means that it can be economically equal and environmentally logical to use the blocked development right in the same neighborhood. The development right of the restricted real estate can be transferred to a close-by parcel. It will not only equalize the prices and avoid dramatic value differences between the zones, but also the neighborhood will "consume" its own development potential. The other advantage is that if the right is used in the same neighborhood, the transfer can be made by the exact floor area. For example, if the landowner's blocked floor area is 200 m², this figure can directly be transferred onto another lot in the same neighborhood and be used there. It can avoid the complication of deciding where the receiving area should be and save a lot of time and effort for the authorities.

On the other hand, if the transfer needs to be made to another neighborhood/zone, then the economic equalization of the values will be required. Real estate appraisals will be needed for the "sending" and "receiving" areas. If we use the example of 200 m² floor area as mentioned above, and the market value in the "sending area" is, for example, 5000 TL/m², the economic value of the development right is 200 m² × 5000 TL = 1,000,000 TL. This way, the floor area in the "sending area" is turned into an economic value. Then, the average market value per square meter of the "receiving area" will also be appraised, for example it is 10,000 TL/m². The calculated "1,000,000 TL" in the "sending area" will be divided by this number, and the equivalent floor area in the "receiving area" is found as: 1,000,000 TL ÷ 10,000 TL/m² = 100 m². This means that, the landowner's restricted 200 m² development right in the "sending area" will be economically equal to 100 m² development right in the "receiving area". The same mathematical approach is applied for the opposite scenario which is the sending area is more expensive than the receiving area. This way the transfer will not enrich or impoverish the landowner and the complaints will be minimized.

5. Legal Background of TDR in Turkey

If we look at the legal background of TDR in Turkey, there are few yet important legal arrangements in different laws in vague terms. Such as in the Article No.13 (2)a of implementing regulation of *Renewal of the Areas under Disaster Risk Act* (Implementation Regulation of 6306 (6306 Sayılı Kanunun Uygulama Yönetmeliği, Resmî Gazete Tarih: 15 December 2012, Sayı: 28498)) No. 6306, stating that "the administration can pay its debt to a person in cash, or by giving a vacant public land, or by transferring the development right to somewhere else"; in the Article No. 11 (1)d of the law of establishment of the Ministry of Environment and Urbanization (Çevre ve Şehircilik Bakanlığının Teşkilat ve Görevleri Hakkında Kanun Hükmünde Kararname, Resmî Gazete, Tarih: 4 July 2011, Sayı: 27984 Mükerrer) No. 644, it says "the Ministry is authorized to transfer development rights"; in the Temporary Article No. 6 of the *Expropriation Act* (Kamulaştırma Kanunu, Resmi Gazete, Tarih: 8 November 1983, Sayı: 18215) No. 2942 "agreements can be made by property exchange, . . . , by permission for using the development right on somewhere else, . . . ". These are all vague statements and there is no explanation of how to do it. In addition, no information has been found in the literature or elsewhere about if they have ever been implemented so far.

Another law that outlines a better TDR concept and provides more technical information than the previously mentioned ones is an article that was enacted in 2004 in the *Protection of Natural and Cultural Assets Act* (Kültür ve Tabiat Varlıklarını Koruma Kanunu, Resmî Gazete, Tarih: 23 July 1983, Sayı: 18113) No. 2863, Article 17(c). This article clearly permits local authorities to implement TDR programs in case of development restrictions on properties because of preservation decisions, which is exactly in compliance with the purpose of this paper. However still, the article finalizes by a clause stating that the implementation of TDR can be made in terms of the "implementing regulation". However, this regulation has never been enacted. Therefore, in terms of Act No. 2863, it can be said that TDR has never been used in Turkey, or at least no official report or no information

in the literature has been found so far [9,18–22]. Interestingly, it has been 17 years since the enactment of this TDR law, however no progress has been made in this regard. This might be mainly because people are unsure how to implement it technically. Therefore, in this paper, the step-by-step procedures are introduced in compliance with the institutional, professional, traditional, and legal preferences in the country, which is hoped to pave the way for the preparation of the first “implementing regulation” of TDR in Turkey.

6. Proposed TDR Methodology to Be Used in Turkey

The proposed TDR procedures can be exemplified in a scenario analysis as follows. According to it, the landowner is prevented from using 200 m² floor-area because of the restriction. The overall procedures are explained below step by step (Figure 7).

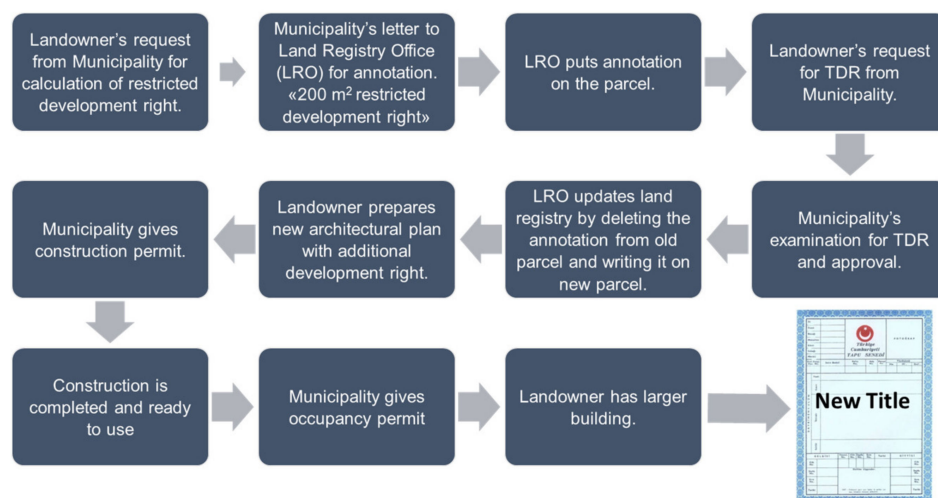


Figure 7. The overview of the proposed TDR process.

Step 1:

In order to talk about the transfer of a development right, first of all, it must be “recognized” by an authority that there is actually a development right which is blocked by a public decision without any compensation. Without it, this subject can only be an abstract philosophical discussion. The address for this recognition can be the municipalities (or local authorities). Because the municipality is the authority which handles all development issues. The municipality prepares development plans, accepts or refuses development requests, or changes any development decisions that were enacted earlier. If the municipality legally has full-control over the development subject, it should be the address to apply for TDR as well.

To obtain this recognition, the owner of the historic building will apply to the municipality that there is a restricted development right because of the preservation decision and there is an uncompensated development loss because of it. The owner applies to the municipality with a petition demanding technical research on how much floor area is unusable due to the preservation. The municipality then analyzes the application and calculates the development loss of the applicant. However, it is not enough. This information should be recorded somewhere, and the correct place to record this information is the title of the real estate in the land registry office. Therefore, in the same petition, the applicant also asks from the municipality to send the calculated amount of development loss (200 m² in our example) to the local land registry office to put an annotation on the title of the parcel. This way, the unused development right will automatically be secured and recognized by the State (Figure 8).

Date: .../.../.....
PETITION TO THE MUNICIPALITY OF ...
<p>I am the owner of the land parcel No. 101/5 in Saray Neighborhood. The development plan in my neighborhood permits a 4-story building. However, the current 2-story building on my parcel is decided to be registered as “historic and cultural property” and restricted by the Preservation Board, therefore I am not allowed to redevelop my lot to have a 4-story building. Therefore, I do have a loss of development right because of this preservation decision.</p> <p>I hereby apply to request a technical investigation to calculate how many square meters of floor area that I am deprived of due to the restriction, and I also kindly ask you to send this information to the Directory of Land Registry to put an annotation on the title of my land parcel.</p>
Name SURNAME Signature

Figure 8. Petition from the landowner to the municipality for the recognition and registration of the unusable development right on land registry.

Step 2:

The municipality receives the petition, and the relevant department investigates the request and calculates the exact square meter of the restricted development right of the petitioner. After finding the number, this information is sent by the municipality to the local land registry office to put the annotation on the title accordingly (Figure 9).

MUNICIPALITY OF ...	
Department of Planning and Development	
Subject: Putting annotation on the parcel No.101/5 for restricted development right.	Date: .../.../.....
TO THE DIRECTORATE OF LAND REGISTRY	
Context: The petition of “Name SURNAME”.	
<p>According to the development plan, the parcel No. 101/5 in Saray Neighborhood normally would have maximum of 400 m² building floor area (FAR:1.0, the size of the parcel: 400 m²; 1.0 × 400 = 400 m²). However, currently there is a preserved 2-story historic building which has 200 m² total floor area. Therefore, the landowner is not allowed to use 400 m² – 200 m² = 200 m² floor area due to the restriction.</p> <p>I hereby request from you to put an annotation on the title registry of the above mentioned land parcel that “there is 200 m² restricted/unused development right because of the preservation decision”.</p>	
Mayor Signature	

Figure 9. Letter from municipality to land registry for annotation.

Step 3:

When the official letter from the municipality arrives to the local land registry office, the registry personnel put the annotation on the title of the property in the land registry book. Even though today annotations are only recorded electronically on the *Land Registry and Cadaster Information System* (TAKBIS) since 2015 in Turkey [45,46], for a better read and simplicity, the classic book registry method is showed in the figures in this paper (Figure 10).

KÜTÜĞÜ (Land Registry)	
KULÜN NİTELİĞİ	BEYANLAR (Annotations)
	This parcel has 200 m ²
	restricted development right
	according to the current
	development plan.
	Municipal request,
	12/05/2020, No.1246

Figure 10. Putting annotation on the title in the land registry book (only the relevant part of the registry book is shown and the given date and registry number are random).

Step 4:

Once the restricted development right is registered on the title, this right is now officially recognized. From now on, by the request of the landowner, this right can be transferred to somewhere else (if approved by the authorities in terms of urbanization). The transfer does not have to be undertaken quickly. The owner may prefer to wait. Thus, it is up to the owner when to use it or not. In addition, putting such annotation on the title will automatically increase the market value of the property because the landowner now has the extra development right that can be used somewhere else or can be sold.

According to our scenario, the owner buys another lot in the same block and wants to transfer the restricted development right onto this new parcel. To do that, the owner applies to the municipality with a petition and requests to transfer the restricted 200 m² of development right onto this new parcel (Figure 11).

Date: .../.../.....
PETITION TO THE MUNICIPALITY OF ...
<p>I am the owner of the land parcel No. 101/5 in Saray Neighborhood. Because of the preservation decision, there is 200 m² restricted development right on my lot that I cannot use. I'd like to transfer this whole restricted floor area (200 m²) to the parcel No.101/3 in the same block which is in my ownership as well. I hereby request to apply for the Transfer of Development Rights (TDR) program.</p>
Name SURNAME Signature

Figure 11. Petition of landowner to municipality for transfer of development right.

Step 5:

When the petition of TDR request arrives to the municipality, it will be analyzed if it is appropriate for the urbanization rules and principles. If the municipality finds no obstacles, the request will be approved. If it is found inappropriate for the urbanization of the city, the request will be declined. The decision-making body in the municipality in Turkey can be municipal board (in Turkish, *belediye encümeni*) or municipal council (*belediye meclisi*). However municipal council is preferred and suggested in this study. The request is firstly analyzed by the planning and development department of the municipality which mainly consists of planners, engineers and architects. After the initial research, the request and the technical opinion are sent to the municipal council for the final decision. According to our scenario, the request of TDR is approved (Figure 12).

MUNICIPALITY OF ...		
DECISION OF MUNICIPAL COUNCIL		
Date: .../.../....		
No: ..		
<p>The TDR application of "Name SURNAME" is discussed. The request of transferring 200 m² restricted development right from the land parcel No.101/5, to the parcel No.101/3 is found appropriate for the urbanization of the city. Therefore the TDR application is approved.</p>		
<u>Mayor</u> Signature	<u>Council Member</u> Signature	<u>Council Member</u> Signature

Figure 12. Decision of municipal council for TDR request.

Step 6:

The TDR application is approved by the municipality. However, this is only an approval. To update the land registry records, the owner should apply to the land registry office with the approval decision of municipal council to cancel the old restriction annotation on the "sending parcel" No. 101/5, and then put a new annotation on the "receiving parcel" No. 101/3 stating that "the 200 m² development right is transferred from the lot No. 101/5 to the lot No. 101/3".

Putting this information on the title of the lots in land registry does not only mean the recognition of a right, but also it helps third parties to get informed about the current rights and responsibilities of the parcels if they want to buy them. In this way, if the "sending parcel" (together with the historic building on it) is to be sold to someone else, the buyer will clearly see that the restricted development right on this lot is transferred to somewhere else, so the buyer will be aware of that there is no more potential of development rights on the parcel. When the development right is transferred to another lot, the market value of the sending lot will decrease accordingly. On the other hand, if the "receiving lot" is subject to a sale, the potential buyer of it will be aware of, in addition to the original development right of the lot, that there is an extra development right on it that is coming from another parcel through TDR. This will increase the demand and accordingly increase the market value of the receiving lot. Essentially, recording TDR on the land registry is not only a recognition by the State, but it also serves to the publicity of the land registry information in order to protect the new buyers from misinformation.

The landowner applies to the local land registry office with a petition (together with the decision of approval of the municipal council attached) to make relevant changes on the titles for the transfer from the sending parcel to the receiving parcel (Figure 13).

MUNICIPALITY OF ...	
DECISION OF MUNICIPAL COUNCIL	
<p style="text-align: right;">Date: .../.../....</p> <p style="text-align: center;">PETITION TO THE DIRECTORATE OF LAND REGISTRY</p> <p>I am the owner of the land parcels No.101/5 and No.101/3. There is 200 m² restricted development right on the parcel No.101/5. I applied to the municipality to transfer my 200 m² restricted development right from the parcel No.101/5 to the parcel No.101/3 and my request has been approved by the Municipal Council. The decision of the Council is attached to this letter. I hereby apply to you to make the relevant changes on the land registry of the two parcels accordingly.</p> <p style="text-align: right;">Name SURNAME Signature</p> <p>Attachments: - Decision of the Municipal Council.</p>	<p>...ed. The request of transferring 101/5, to the parcel No.101/3 is ... e TDR application is approved.</p> <p style="text-align: center;"><u>Council Member</u> Signature</p>

Figure 13. Landowner's application to land registry office for the update in land registry.

Step 7:

After the application of the landowner, the local land registry office will make the transfer on the land registry book by canceling/deleting the annotation on the sending parcel and putting a new annotation on the receiving parcel. The transfer is clearly referenced to each other on both titles (Figure 14).

KÜTÜĞÜ (Land Registry)	
NİTELİĞİ	BEYANLAR (Annotations)
Parcel No.101/5	
This parcel has 200 m² restricted development right according to the current development plan.	200 m ² restricted development right is deleted from this parcel and transferred to the parcel No. 101/3.
Municipal request. 12/05/2020, No.1246	01/06/2020, No.1280

KÜTÜĞÜ (Land Registry)	
NİTELİĞİ	BEYANLAR (Annotations)
Parcel No.101/3	
	200 m ² restricted development right on the parcel No.101/5 is transferred to this parcel.
	01/06/2020, No.1280

Figure 14. TDR update on land registry (only relevant part of the page of registry book is shown).

Step 8:

The transfer of development right is now “legally” made; however, it is not made “practically” yet. After this point, the owner will apply to the municipality to take a development sketch (in Turkish, *imar çapı*) for the receiving parcel together with its bonus density. In our scenario, the original right of the receiving parcel was 400 m², plus the incoming TDR of 200 m², the total floor area is now 600 m². The municipality will give a development sketch for 600 m² floor area. Then, the landowner will apply to an architect to prepare a building project which has 600 m² total floor area with an appropriate building height and width as implied by the municipality. After that, the landowner, together with the new architectural plan and other relevant documents, will apply to the municipality for a construction permit (in Turkish, *inşaat ruhsatı*). After the construction is completed and ready to use, the municipality will give the occupancy permit (in Turkish, *yapı kullanma izin belgesi*) [47,48]. At the end, the landowner will have a larger building and the restricted development right is completely consumed by the owner. As a result, the State did not need to spend any money and the injustice problem is solved by using the restricted development right of 200 m² on another land parcel (an overview of the procedures can be found in Figure 7).

7. Interviews with Sector Professionals

The implementation methodology proposed above is analyzed by interviewing 18 professionals from relevant sectors. The interviewees were found through personal contacts. All the participants reside in Antalya Province in Turkey. The interviews were conducted with open questions rather than a survey questionnaire and lasted around 45 min per participant. The meetings were held either in the workplaces of the participants (14 participants), or via video conference over the internet (four participants). The interviews were conducted with a PowerPoint presentation explaining the methodology and technical steps with aforementioned facts and figures.

The TDR concept is primarily in the field of construction, urbanization, and legal expertise. Accordingly, the interviewees were selected from these five professions: surveying engineering (also called geomatics or land surveying), civil engineering, architecture, urban

planning, and lawyer profession with various educational and professional backgrounds from the private and public sectors. The careers of the participants are listed below (Table 4). The implementation steps were introduced to the interviewees, and they were asked what they think about the suggested procedures with the consideration of Turkish organizational, institutional, professional, legal, and traditional preferences.

Table 4. Careers of the interviewees.

	Profession	Degree	Sector	Experience (Year)
1	Architect	MSc	Academic	5+
2	Architect	MSc	Public	5+
3	Architect	BSc	Private	3+
4	Architect	MSc	Academic	3+
5	Architect	MSc	Academic	5+
6	Civil Engineer	PhD	Academic	25+
7	Civil Engineer	BSc	Private	5+
8	Lawyer	BSc	Private	15+
9	Lawyer	BSc	Private	10+
10	Lawyer	BSc	Private	20+
11	Lawyer	BSc	Private	15+
12	Surveying Engineer	MSc	Public	10+
13	Surveying Engineer	BSc	Private	10+
14	Surveying Engineer	BSc	Private	25+
15	Surveying Engineer	MSc	Public	25+
16	Urban Planner	MSc	Academic	3+
17	Urban Planner	BSc	Private	10+
18	Urban Planner	BSc	Private	15+

The “technical interviews” were made only with the focus on the technical steps introduced above. The interviews were performed with the same manner as explained in Section 6 step-by-step. After completing the presentation and explaining the implementation steps, the interviewees were asked the following two questions: “Q1: Is the introduced methodology technically applicable/appropriate in Turkey?” and “Q2: Do you have any suggestions to improve the methodology?”. Since the introduced methodology is offered for the whole country, the answers of participants were not place-specific either. The overview of answers can be seen in Figure 15.

According to the interview results, all the participants agreed on the methodology and confirmed the implementation steps proposed in this study for their applicability in Turkey. There were minor suggestions by few participants. Only three participants suggested that “municipal boards” (in Turkish *belediye encümeni*, they meet at least once a week) or a specially formed “TDR board” can also be an option as the approval authority in the municipality, rather than “municipal councils” (in Turkish *belediye encümeni*, they meet at least once a month). They stated that these suggestions were made solely with the intention to decrease the workload of municipal councils. However, they also admitted that this is a minor suggestion and there is nothing wrong to go with the “municipal council” as well. In brief, the technical implementation steps suggested above are completely approved by the interviewed 18 sector professionals in terms of applicability in the land registry-development bureaucratic framework in Turkey.

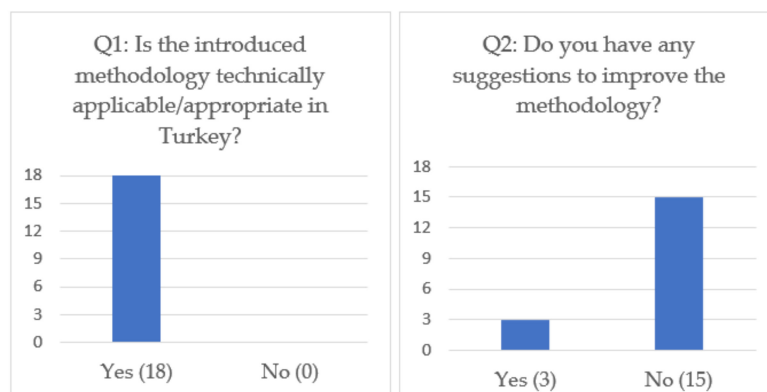


Figure 15. Interview results.

Together with the confidence provided by the positive feedback from the interviews, the authors believe that a successful TDR can help save our cultural heritage. For example, the historic building shown in Figure 16 no longer exists. The building somehow escaped from the net of the Preservation Board, so the owner(s) demolished this valuable landmark and redeveloped it with a modern multistory apartment building. With a successful TDR option, such historic buildings can be saved without causing unjust development restrictions which encourage landowners to find ways to demolish and redevelop their inheritance buildings.



Figure 16. An example of a destroyed and redeveloped historic building in Turkey (It was not listed as a “historic building” before the destruction. The construction started in December 2019).

8. Discussions and Conclusions

Since TDR is a new approach in Turkey and an implementing regulation (*uygulama yönetmeliği*) could not be enacted yet, this paper attempts to pave the way for the preparation of an implementing regulation. Although TDR legislations have been made as early as 17 years ago, the reasons for such a delay for the usage of TDR in Turkey can be analyzed in these two facts: (i) how to make the transfer technically is unknown, i.e., not knowing where to go, who to apply, which administration or agency does which part of the work and who will be responsible for what; and (ii) the fear of negative results of TDR, such as aesthetic concerns (causing high-rise buildings in wrong areas), physical concerns (putting excessive pressure on the infrastructure), social concerns (failing to avoid ill-intentioned people to abuse the system) and legal concerns (causing unforeseen legal consequences). These concerns are not invalid at all. However, this paper is based on the first part of the questions: how to make a transfer technically. The authors think that it is a better idea to divide these two questions and analyze them separately. After defining the processes and having a sense of direction, then it can be easier to talk about the potential bumps and holes on the road. Otherwise, the fear of failure will continue to keep the sector from taking any steps in this field.

Finally, with the confidence provided by the interviews with 18 related sector professionals, this paper confirms that the TDR process in Turkey can be handled between the

“landowner”, the “municipality” and the “land registry office” as explained in Section 6 “Proposed TDR Methodology to be Used in Turkey”. The proposed methodology could help reduce the economic losses of landowners of restricted properties, support public finances by not spending limited public budgets for the compensation of development restrictions, make the “transfer process” completely transparent to public scrutiny, and finally support the overall preservation of historic buildings in the country.

However, a minor addition can still be made here. Although it is not mentioned in the methodology section above, local cadastral offices can take part between the municipality and the land registry office for the inspection of the technical calculations made by the municipality. Because land registry offices are unable to make those technical inspections. The *land registry agency* in Turkey is traditionally highly alert to potential errors and mistakes, so the agency may ask technical inspections of the sibling agency: the *cadaster office*. Since the *land registry* and *cadaster* offices are the arms of the same upper-authority, *General Directorate of Land Registry and Cadaster*, local cadastral offices can make the technical checks for the municipality’s applications, and then send the application to the land registry office if there is no technical problem. If they find an error though, they can send it back to the municipality to make relevant corrections. This way the land registry office will have the confidence to keep the records as correct as possible.

There are few academic studies in this subject in the Turkish academia. Although the literature may provide some information about the need for TDR in various fields, it still lacks providing practical implementation methodologies. This paper is aimed to fill this gap by offering a step-by-step technical implementation of a TDR program. In addition, the usage of TDR in the field of preservation of cultural heritage could facilitate its usage in different areas such as protection of agricultural lands, or even urban regeneration projects. Therefore, the authors call for more academic work on this topic.

Author Contributions: This paper is based on the ongoing PhD thesis study of Y.K. who is a lecturer at Alanya Alaaddin Keykubat University and a PhD candidate of Istanbul Technical University; and M.Y. is the head of Geomatics Engineering Department at Istanbul Technical University and also the supervisor of the mentioned PhD study. The paper was formed by the collaboration of the two authors. Conceptualization, Y.K. and M.Y.; data curation, Y.K. and M.Y.; formal analysis, Y.K. and M.Y.; investigation, Y.K. and M.Y.; methodology, Y.K. and M.Y.; project administration, M.Y.; resources, Y.K. and M.Y.; software, Y.K.; supervision, M.Y.; validation, M.Y.; Visualization, Y.K.; writing—original draft, Y.K.; writing—review & editing, Y.K. and M.Y. All authors have read and agreed to the published version of the manuscript.

Funding: This research received no external funding.

Institutional Review Board Statement: Not applicable.

Informed Consent Statement: Not applicable.

Data Availability Statement: The photographs of historic buildings used in this paper were personally taken by Yunus Konbul in June and July 2019 (except the historic building on Figure 16 which is taken from Google Street View dated July 2014 and the photograph of the construction was taken in January 2020 by Yunus Konbul); the satellite images were obtained from the HGM Küre service of the national mapping agency of Turkey [49]; the cadastral information and development plans were obtained from the official websites of General Directorate of Land Registry and Cadaster [50] and the Municipality of Alanya [51] which are all non-confidential online sources. The satellite images and development plans are oriented towards the North.

Acknowledgments: The authors would like to thank all the interviewees for their participation. The three examples of preserved historic buildings used in this paper were selected among many other building examples upon their location and their appearance.

Conflicts of Interest: The authors declare no conflict of interest.

References

1. Wang, G.; Liu, S. Adaptability evaluation of historic buildings as an approach to propose adaptive reuse strategies based on complex adaptive system theory. *J. Cult. Herit.* **2021**, *52*, 134–145. [CrossRef]
2. He, Q.; Larkham, P.; Wu, J. Evaluating historic preservation zoning using a landscape approach. *Land Use Policy* **2021**, *109*, 105737. [CrossRef]
3. T.C. Kültür ve Turizm Bakanlığı. *2863 Sayılı Kültür ve Tabiat Varlıklarını Koruma Kanunu (Protection of Cultural and Natural Assets Act No.2863)*; T.C. Kültür ve Turizm Bakanlığı: Ankara, Turkey, 1983; pp. 5879–5900.
4. Pizor, P.J. Making tdr work: A study of program implementation. *J. Am. Plan. Assoc.* **1986**, *52*, 203–211. [CrossRef]
5. Feng, K.; Cao, S.; Wei, S.; Lu, Z. Application of Transferable Development Rights in Cultivated Land Protection in China. *China Popul. Resour. Environ.* **2008**, *18*, 8–12. [CrossRef]
6. Wang, H.; He, C.; Li, W.; Nie, X.; Zhong, H.; Wen, L. Will transferable development rights (TDR) increase regional economic imbalance?—A quota transaction case of cultivated land conversion and reclamation in Guangxi, China. *Habitat Int.* **2020**, *104*, 102254. [CrossRef]
7. Uzun, B. Using land readjustment method as an effective urban land development tool in Turkey. *Surv. Rev.* **2009**, *41*, 57–70. [CrossRef]
8. Uzun, B.; Celik Simsek, N. Land readjustment for minimizing public expenditures on school lands: A case study of Turkey. *Arab. J. Geosci.* **2018**, *11*, 228. [CrossRef]
9. Aliefendioğlu, Y.; Duman, İ. İmar Hakları Transferinde Değer Esaslı Uygulama Olanakları: Van İli Örneği (Development Rights Transfer and Opportunities for Implementation: An Evaluation of the Province of Van Example from the Aspects of Theoretical Principles and Practice). *Akad. Sos. Araştırmalar Derg.* **2017**, *5*, 163–193.
10. Yanik, T.; Suri, L. İmar Hakkı Transferi. *Teknoloji ve Uygulama Bilim Derg.* **2020**, *2*, 35–42.
11. Pruetz, R.; Standridge, N. What Makes Transfer of Development Rights Work?: Success Factors From Research and Practice. *J. Am. Plan. Assoc.* **2008**, *75*, 78–87. [CrossRef]
12. Linkous, E.R. Transfer of development rights in theory and practice: The restructuring of TDR to incentivize development. *Land Use Policy* **2016**, *51*, 162–171. [CrossRef]
13. Falco, E.; Chiodelli, F. The transfer of development rights in the midst of the economic crisis: Potential, innovation and limits in Italy. *Land Use Policy* **2018**, *72*, 381–388. [CrossRef]
14. Van der Veen, M.; Spaans, M.; Janssen-Jansen, L. Using compensation instruments as a vehicle to improve spatial planning: Challenges and opportunities. *Land Use Policy* **2010**, *27*, 1010–1017. [CrossRef]
15. Ministry of Environment and Urbanisation. Official Gazette, Turkey 2020. Available online: <https://www.resmigazete.gov.tr/eskiler/2020/03/20200310-7.htm> (accessed on 7 April 2021).
16. Coruhlu, Y.E.; Uzun, B.; Yildiz, O. Zoning plan-based legal confiscation without expropriation in Turkey in light of ECHR decisions. *Land Use Policy* **2020**, *95*, 104598. [CrossRef]
17. Turk, S.S. Land readjustment: An examination of its application in Turkey. *Cities* **2005**, *22*, 29–42. [CrossRef]
18. Guzle, G.; Akpınar, F.; Duvarcı, Y. Transfer of development rights for the effectiveness of the conservation plans: A case from Historic Kemeraltı, İzmir. *Habitat Int.* **2020**, *103*, 102207. [CrossRef]
19. Aksoy, M.A.; Yalçın, K.; Aksoy, E.E. İmar Hakkı Transfer Sistemi ve Türkiye İçin Bir Model Önerisi. *Ömer Halisdemir Üniversitesi İktisadi Ve İdari Bilim. Fakültesi Derg.* **2019**, *12*, 440. [CrossRef]
20. Kaman, A.F.Z.; Aliefendioğlu, Y. Doğa koruma alanlarında İmar Hakkı aktarımı uygulamaları üzerine bir değerlendirme. *Ank. Üniversitesi SBF Derg.* **2017**, *72*, 715–743. [CrossRef]
21. Böke, V.; Tanrıvermiş, H. İmar Hakkı Transferi ve Başlıca Uygulama Alanları İle Türkiye’de İmar Hakkı Transferi Uygulama Olanaklarının Değerlendirilmesi. *Int. J. Res. Bus. Soc. Sci.* **2017**, *6*, 56–86. [CrossRef]
22. Mataracı, O.; Haznedar, H.; Şahin, N.; Bayraktar, Ş. Kentsel Dönüşümde Alternatif Bir Yöntem: İmar Hakkı Transferi (An Alternative Method in Urban Regeneration: Transfer of Development Rights). In Proceedings of the 16th Turkey Mapping Science Technology Congress, Ankara, Turkey, 3–6 May 2017. (In Turkish).
23. Klaus, J. Sharing property value losses: The spatial concentration of development rights as a way to limit urban sprawl. *Land Use Policy* **2020**, *94*, 104540. [CrossRef]
24. Menghini, G.; Gemperle, F.; Seidl, I.; Axhausen, K.W. Results of an Agent-Based market simulation for transferable development rights (TDR) in Switzerland. *Environ. Plan. B Plan. Des.* **2015**, *42*, 157–183. [CrossRef]
25. Ferreira, A. Reconsidering the merit of market-oriented planning innovations: Critical insights on Transferable Development Rights from Coimbra, Portugal. *Land Use Policy* **2020**, *99*, 104977. [CrossRef]
26. Wang, B.; Li, F.; Feng, S.; Shen, T. Transfer of development rights, farmland preservation, and economic growth: A case study of Chongqing’s land quotas trading program. *Land Use Policy* **2020**, *95*, 104611. [CrossRef]
27. Linkous, E.R.; Chapin, T.S. TDR program performance in florida. *J. Am. Plan. Assoc.* **2014**, *80*, 253–267. [CrossRef]
28. Dyca, B.; Muldoon-Smith, K.; Greenhalgh, P. Common value: Transferring development rights to make room for water. *Environ. Sci. Policy* **2020**, *114*, 312–320. [CrossRef]
29. Johnston, R.A.; Madison, M.E. From land marks to landscapes: A review of current practices in the transfer of development rights. *J. Am. Plan. Assoc.* **1997**, *63*, 365–378. [CrossRef]

30. Chan, E.H.W.; Hou, J. Developing a framework to appraise the critical success factors of transfer development rights (TDRs) for built heritage conservation. *Habitat Int.* **2015**, *46*, 35–43. [[CrossRef](#)]
31. Chiodelli, F.; Moroni, S. Zoning-integrative and zoning-alternative transferable development rights: Compensation, equity, efficiency. *Land Use Policy* **2016**, *52*, 422–429. [[CrossRef](#)]
32. Shahab, S.; Clinch, J.P.; O’Neill, E. Timing and distributional aspects of transaction costs in Transferable Development Rights programmes. *Habitat Int.* **2018**, *75*, 131–138. [[CrossRef](#)]
33. Shih, M.; Chiang, Y.H.; Chang, H.B. Where does floating TDR land? An analysis of location attributes in real estate development in Taiwan. *Land Use Policy* **2019**, *82*, 832–840. [[CrossRef](#)]
34. Giordano, M. Over-Stuffing the Envelope: The Problems with Creative Transfer of Development Rights. *Urban Law J.* **1987**, *16*, 43–67.
35. Levinson, A. Why oppose TDRs?: Transferable development rights can increase overall development. *Reg. Sci. Urban Econ.* **1997**, *27*, 283–296. [[CrossRef](#)]
36. Kaplowitz, M.D.; Machemer, P.; Pruetz, R. Planners’ experiences in managing growth using transferable development rights (TDR) in the United States. *Land Use Policy* **2008**, *25*, 378–387. [[CrossRef](#)]
37. Colavitti, A.M.; Serra, S. The transfer of development rights as a tool for the urban growth containment: A comparison between the United States and Italy. *Pap. Reg. Sci.* **2018**, *97*, 1247–1265. [[CrossRef](#)]
38. Henger, R.; Bizer, K. Tradable planning permits for land-use control in Germany. *Land Use Policy* **2010**, *27*, 843–852. [[CrossRef](#)]
39. Janssen-Jansen, L.B. Space for Space, a transferable development rights initiative for changing the Dutch landscape. *Landsc. Urban Plan.* **2008**, *87*, 192–200. [[CrossRef](#)]
40. Van Gossum, P.; Arts, B.; van Laar, J.; Verheyen, K. Implementation of the forest expansion policy in the Netherlands in the period 1986–2007: Decline in success? *Land Use Policy* **2010**, *27*, 1171–1180. [[CrossRef](#)]
41. Liang, X.; Yuan, Q.; Tan, X.; Chen, S. The conservation of collective-owned farmland via the transfer of development rights (TDR) in China—the case of Ecological Fruit Park in Guangzhou. *J. Rural Stud.* **2020**, *78*, 399–410. [[CrossRef](#)]
42. Chen, C.; Yu, L.; Choguill, C.L. “Dipiao”, Chinese approach to transfer of land development rights: The experiences of Chongqing. *Land Use Policy* **2020**, *99*, 104870. [[CrossRef](#)]
43. Shahab, S.; Clinch, J.P.; O’Neill, E. An Analysis of the Factors Influencing Transaction Costs in Transferable Development Rights Programmes. *Ecol. Econ.* **2019**, *156*, 409–419. [[CrossRef](#)]
44. Kocalar, A.C. The Transfer of Property and Development Rights in Turkey. *Megaron* **2012**, *7*, 27.
45. Ercan, O. A closer look at Turkish cadastre and its successful completion. *Land Use Policy* **2021**, *110*, 104951. [[CrossRef](#)]
46. Polat, Z.A.; Alkan, M.; Sürmeneli, H.G. Determining strategies for the cadastre 2034 vision using an AHP-Based SWOT analysis: A case study for the turkish cadastral and land administration system. *Land Use Policy* **2017**, *67*, 151–166. [[CrossRef](#)]
47. Guler, D.; Yomralioglu, T. A reformative framework for processes from building permit issuing to property ownership in Turkey. *Land Use Policy* **2021**, *101*, 105115. [[CrossRef](#)]
48. Döner, F.; Şirin, S. 3D Digital Representation of Cadastral Data in Turkey—Apartments Case. *Land* **2020**, *9*, 179. [[CrossRef](#)]
49. HGM Küre Service of the National Mapping Agency of Turkey. Available online: www.harita.gov.tr (accessed on 7 April 2021).
50. General Directorate of Land Registry and Cadaster. Available online: <https://parselorgu.tkgm.gov.tr> (accessed on 7 April 2021).
51. Municipality of Alanya. Available online: <https://www.alanya.bel.tr> (accessed on 7 April 2021).