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# The transfer of development rights in the midst of the economic crisis: potential, innovation and limits in Italy

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## 1. Introduction: the gaps in the research on the transfer of development rights

The concept of Transfer of Development Rights (TDR) has a long history and has been used around the world for several decades. The first applications date back to a New York zoning ordinance of 1916 (Giordano, 1987). However, it was in the 1960s and 1970s that the concept of transferable development rights was comprehensively formulated (Lloyd, 1961; see also Kaplowitz *et al.*, 2008) and debate on its applications gained momentum (see for instance: Carlo and Wright, 1977; Carmichael, 1974; Costonis, 1973; Gale, 1977; Rose, 1975; Woodbury, 1973). In the same years, the ‘first-generation’ TDR programs were implemented in the USA (Kaplowitz, 2008; Walls and McConnell, 2007). Following the first US experiences, TDR programs spread to other Western countries, such as France (Renard, 2007), the Netherlands (Janssen-Jansen, 2008), Germany (Henger and Bizer, 2010), Switzerland (Menghini *et al.*, 2015), Canada (Gabriel and Freeman, 1986) and Italy (see Section 2.2), as well as to Eastern countries such as China (Hin and Gan, 2013; Wang *et al.*, 2010; Zhu, 2004), South Korea (Cho, 2002), and Taiwan (Jin and Dai, 2010; Shih and Chang, 2016).

Nonetheless, nowadays “TDR is still considered ‘innovative’ and is not widely used” (Nelson *et al.*, 2012, p. 24) and, as sarcastically underlined by some scholars, over the years the number of articles written on TDR would have exceeded the number of TDR programs (Pizor, 1986). In fact, in many cases, TDR programs did not work properly and were not able to achieve their pre-set objectives (Juergensmeyer *et al.*, 1998; McConnell and Walls, 2009; Renard, 2007).

However, in our opinion, this picture does not fully consider the Italian context, where TDR programs have a relatively long and successful history. In Italy, an early example is the mechanism foreseen by the Turin land use plan of 1959 (Mengoli, 2012), but it is during the past two decades that TDR programs have become common praxis in many municipalities.<sup>1</sup>

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<sup>1</sup> To be stressed is that , the diffusion of TDR practices across Italy varies, due also to reasons linked with regional planning legislations. At the time of writing, 14 out of 20 Italian regions make provisions for the use of some kind of TDR program.

Similarly to the US debate, the Italian literature on TDR is well developed and rich (to mention only some contributions: Camagni 2014; Chiodelli 2016; Colavitti and Serra, 2017; De Carli, 2012; Micelli 2002, 2004, 2011, 2014 and 2016; Moroni 2012 and 2014; Stanghellini, 2013). However, it appears to be mainly centred around either single case studies or theoretical contributions which do not aim at an empirical evaluation of programs in force. Against this backdrop, the present paper has a twofold aim: firstly, to fill the gap in the Italian literature through an empirical analysis of multiple case studies which shed light on their features, limitations and success factors; secondly, to contribute to the development of the international TDR debate in light of recent experiences in Italy. For these purposes, the article investigates TDR practices implemented by the twelve provincial capital cities in the Lombardy region, in Northern Italy.

The article is structured as follows: Section 2 deals with the main characteristics of TDR programs as discussed in the international literature and explains the specific features of the Italian context. Section 3 discusses the research design that we employed to conduct our research. Section 4 presents the findings of our research with a focus on the nature, forms, features and specificities of TDR programs implemented in the twelve case studies. Section 5 discusses the findings in relation to both the international and Italian debate. Section 6 concludes.

## **2. Theory and practice of TDR**

### **2.1. *An overview on the transfer of development rights***

In traditional land use planning, development rights are fixed and anchored to a specific land plot. By ‘development right’ we mean the right, granted by a public authority through some form of land regulation, to develop land or add density to already existing development. Unlike traditional zoning, in a TDR program development rights ‘generated’ by a specific plot (*sending area*) can be transferred and ‘consumed’ on a different plot (*receiving area*). In this way, the connection between a particular plot which generates these rights and its transferable development potential is severed (Costonis, 1973).

Johnston and Madison (1997, p. 365) defined TDR as “the sale of one parcel’s development rights to the owner of another parcel, which allows more development on the second parcel while reducing or preventing development on the originating parcel”. Sending areas generally include territorial resources that a community wants to preserve, such as environment and landscape protection areas, agricultural land, open space, and so on. Receiving areas are areas suitable for development, where development rights can be transferred and ‘used’ (for a detailed analysis of the functioning of TDR programs, see for example: Nelson *et al.*, 2012; Walls and McConnell, 2007).

Until today, the majority of programs have mainly been designed and implemented in the US, and show varying features. For example, they can: distinguish or not between sending and receiving areas; identify only one or several receiving areas; determine higher or lower TDRs allocation rates; assign different roles to

the public authority (which can be more passive, as in the case of a pure free-market exchange of transferable rights, or more active, as in the case of a TDR bank<sup>2</sup> set up by the public authority).

Regardless of the different specificities, TDR programs have been implemented mainly for reasons of compensation, efficiency and equity (Chiodelli and Moroni, 2016).<sup>3</sup> In fact, several programs have been used as a way to compensate landowners in areas hit by restrictive zoning: “the term transferable development right (TDR) is a generic name that has been used to describe a number of different compensation schemes” (Strugar, 1985, p. 634). Such compensations make it possible to avoid eminent domain-taking deadlock (Richman and Kanding, 1977); that is, they are a mitigation for regulatory takings (Linkous, 2016) - and they do this without requiring any disbursement of public funds.<sup>4</sup> In some cases, also efficiency reasons justify the adoption of TDR programs, since, by making use of ‘quasi-market mechanisms’, they would be more efficient than traditional zoning (Juergensmeyer *et al.*, 1998). In addition, equity reasons too are advanced in order to support them: TDR programs would reduce disparities inherent to zoning and its uneven economic impacts on landowners (Clinch and O’Neill, 2010). As Juergensmeyer *et al.* (1998, p. 444) underline, TDR programs “would allow all landowners to benefit from an area’s development, and require all benefited landowners to pay the costs associated with the preservation and protection of sensitive land in the area.”

Without regard to many and different alternative options and characteristics of TDR programs, many scholars have underlined the limits of the transfer of development rights *per se*. In particular, they have stressed that TDR programs can only work when a number of specific success factors exist (e.g., specific characteristics of receiving areas, few or no alternatives to TDR for achieving extra density, developers’ actual need for extra density, strict development regulations on sending areas, use of incentives like increased transfer ratios), which, however, are generally not found in the vast majority of cases (for a detailed analysis of such success factors, see: Pruetz and Pruetz, 2007; Pruetz and Standridge, 2009). Moreover, high transaction costs are associated with TDR programs, which would undermine their implementation and in many cases contribute to making TDR programs an infeasible option (Barrese, 1985; Chomitz, 2004; Micelli, 2002; Nelson *et al.* 2012).

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<sup>2</sup> The public TDR bank aims to guarantee landowners a ‘fair price’ for their development rights and favour a TDRs market exchange. To this end, it buys development rights from the landowners of sending areas (when they want to sell them), even if there are no immediate private buyers.

<sup>3</sup> Obviously, TDR programs were introduced also for other reasons. For example, they would reduce incentives to engage in corrupt practices, which are widespread in traditional zoning: “there are all too many documented examples of corruption and bribery of officials involved in zoning. [... TDR] removes the temptation that zoning creates” (Moore, 1975, p. 339; on this issue, see also Chiodelli and Moroni, 2015).

<sup>4</sup> According to some authors (see for instance Linkous, 2016), TDR programs are means for ‘just compensation’ as well. On the contrary, Rick Pruetz (2017, October 17, personal communication) considers this position not entirely convincing. In fact, in *Penn Central Transportation Co. v. New York City*, the US Supreme Court stated that transferable development rights can *mitigate* the impact of a regulation, but it has not yet issued an opinion about whether TDRs are ‘just compensation’ in the event that a regulation constitutes a taking.

## 2.2 TDR in Italy

In Italy, TDR programs are known as practices of ‘equalization [*perequazione*]’ and ‘compensation [*compensazione*]’ (Micelli, 2002). In fact, the essential purpose of the transfer of development rights is to ‘equalize’ the public treatment of landowners through an equal allocation of development rights by the municipality, whose parcels would otherwise be designated for different building densities, consequently creating different land values. At the same time, some landowners are compensated with (transferable) development rights for a loss of potential economic value in the case of imposition of building restrictions on their land.

Generally speaking, two types of TDR programs exist in Italy. The first type is the so-called ‘localized transfer of development rights [*perequazione di comparto*]’. In this case, transfers can occur only within a pre-delimited and identified area. All properties within this delimited area receive a unique and identical development ratio, independent of the land use designated for each property by the land use plan. On the basis of the land use plan, some zones are used for public services and facilities (that is, they are sending areas), while some other zones receive the development rights and are designated as developable land (that is, they are receiving areas). Sending areas are then usually relinquished for free to the municipality, to form a public reserve of areas. In this quite simple form of transfer, areas are normally of limited dimensions, and also limited is the number of landowners and properties involved, in order to favour actual implementation of the development plan; therefore, development rights are simply moved spatially, rather than traded (for specific examples, see Micelli, 1997 and 2002). The second type is the so-called ‘generalized transfer of development rights [*perequazione estesa* or *generalizzata*]’. In this case, transfers can occur from any sending area to any of the receiving areas as identified by the master plan. Many sending and receiving areas are involved in programs of this type (as well as many landowners), which can potentially concern all of a city’s territory (and which generally concern large portions of it). A true market of development rights arises in the case of the generalized transfer of development rights. This second type is less common, but at the same time more similar to US TDR programs and of greater interest and potential. These two types of transfer of development rights can be (and are usually) implemented simultaneously within a municipality. It is worth stressing that, in any case, TDR programs in Italy (as well as in many other countries) supplement traditional planning tools: they are ‘simply’ a different and peculiar way for implementing parts of a land use plan, which are put side by side with other more ordinary tools, such as public-private agreements. On the contrary, they are not conceived and implemented as alternatives to zoning, that is as a mechanism in their own right which replaces traditional land use planning (on this issue see: Chiodelli and Moroni, 2016; Micelli, 2002 and 2010).

Similarly to what happens in the USA, the main aim of TDR programs in Italy is to avoid practical issues linked with some traditional planning practices, such as exercise of eminent-domain powers and imposition

of planning restrictions on areas that the local authority wants to preserve or acquire for public facilities purposes. In particular, municipalities use the transfer of development rights in order to obtain sending areas, which are relinquished for free by landowners (who transfer their rights), without using eminent domain powers and thus avoiding expenditure of public money (since a compensation is always required when a plot is expropriated).

### **3. Research Design**

In order to investigate significant issues of TDR practices in Italy, we applied the case study method to the Lombardy region. In fact, Lombardy is the region where TDR practices have been introduced by a more ambitious and innovative regional planning legislation, with the case of Milano acting as frontrunner and innovator (Camagni, 2015; De Carli, 2012; Goggi, 2014).

The Lombardy region is an interesting case study for the transfer of development rights for several reasons. Firstly, it is by far the most populous region in Italy, with a total population of around 10 million (Istat, 2017). Secondly, it has the most dynamic residential housing market in Italy, with a total of 111 thousand transactions of housing units in 2016. This official figure, consistent for all the years from 2000 to 2016 in percentage terms, represents 21% of the national total (Agenzia delle Entrate, 2017). As far as urban planning is concerned, the Lombardy region was the third Italian region to introduce TDR provisions, doing so in 2005 (after Emilia Romagna in 2000 and Veneto in 2004).

We focused our analysis on the 12 provincial capital cities in Lombardy and started in August 2016 with the collection and analysis of all relevant planning documentation available on those cities. Then, between March and May 2017, we conducted 10 in-depth semi-structured interviews<sup>5</sup> with the chief planning officers of Bergamo, Brescia, Como, Cremona, Lecco, Milano, Monza, Pavia, Sondrio and Varese.<sup>6</sup>

### **4. Findings: The specificity of TDR programs in Lombardy**

#### ***4.1. The spread of TDR programs in Lombardy***

The practices of transferable development rights in Lombardy's capital cities, as they emerge from our study, are extremely fragmented and varied. For instance, public authorities use different terms, allocation rates,

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<sup>5</sup> The face-to-face interviews lasted approximately 1 hour and revolved around four main topics: master plan approval and objectives; TDR program's objectives; TDR program implementation; and personal view on the program. Interviews were transcribed word for word in order to avoid any misinterpretation and minimize personal bias in the analysis of the main aspects. After this step, a two-page document summarizing the key findings from the interviews with each officer was drafted for every single case study. This summary was then submitted by email to the interviewee in order to confirm the information contained in it, fill possible gaps and remedy inaccuracies.

<sup>6</sup> The Municipalities of Mantova and Lodi did not agree to meet us; therefore, the analysis of these two cases was limited to desk and document analysis. Note that both Mantova and Lodi are quite small towns, which do not have a significant TDR program in progress.

and transfer mechanisms. Despite such diversity, which makes it hard to navigate among them, it is clear that TDR is nowadays a widespread and well-established practice in the major cities. In fact, 11 out of the 12 cities analysed use some form of transfer (Table 1). The only exception is the city of Como, which uses neither the localised nor the generalized TDR. This avoidance of TDR is due to two reasons: firstly, the perceived complexity of the mechanism; secondly, the fact that the urban plan (*Piano di Governo del Territorio*) foresees no greenfield development, thus making the use of transferable rights unnecessary (Giovanni Rho, head of the planning office of Como, personal communication, 6 April 2017).

The other 11 cities use TDR programs. All of them use the localized TDR, which has usually been introduced prior to the generalized type and has become a more ordinary mechanism, familiar to developers, professional associations, planners and public officials. This is linked to its simple and straightforward nature, which involves a single and well pre-delimited area affected by a development scheme (*Piano Attuativo*) (see Section 2.2). By contrast, generalized TDR can be much more complex (more similar to US cases). This is also the reason why it appears to be of great interest in the context of our study. Therefore, in the rest of our article, we will deal with the generalized type only, which is currently adopted by 9 cities out of 12. Along with Como, Mantova and Cremona are the other two cities which currently do not have a generalized TDR program in place. However, the municipality of Cremona had used this form of transfer of development rights between 2002 and 2013, obtaining a great amount of areas (390,000 sq. metres; see Table 1). The acquisition of this great amount of areas created issues for the municipality, which did not have a compelling need for new public services and facilities (it already had a high provision of public services and open spaces) and lacked the financial resources to develop and maintain the acquired areas. In fact, in the majority of cases, these acquired areas were agricultural plots, whose maintenance would have imposed a financial burden on the municipal budget. As a consequence, the city decided to lease out these agricultural areas at very low rents, usually to the landowners who had previously relinquished them to the municipality after being granted development rights (Marco Masserdotti, head of the planning office of Cremona, personal communication, 21 March 2017). In the 2013 plan, in light of this situation, the city abandoned the generalized transfer of development rights.

< TABLE 1 AROUND HERE >

Table 1 – Types of TDR programs currently in force in Lombardy’s provincial capitals. Population source: Istat (2017); Area Source: Istat (2013).

#### ***4.2. Forms, characteristics, use and reasons of generalized TDR programs in Lombardy***

As said, the generalized transfer of development rights is applied in the majority of the cases studied (Table 1), albeit with some differences. In this regard, it is possible to identify seven aspects that describe the variety and specific characteristics of generalized TDR programs in Lombardy.

#### *Reasons for TDR adoption*

The first aspect concerns the reasons that have induced municipalities to adopt a generalized type of TDR program. According to the interviewees, in all cases transferable rights have been adopted mainly for two *practical* reasons. The first reason is to resolve the issue of the limited 5-year validity of planning constraints and the need to guarantee monetary compensation for landowners in the case of extension. In fact, planning constraints in Italy cease to be valid 5 years after imposition and, on the basis of Constitutional Court case law, their reiteration is unconstitutional without granting adequate compensation to landowners. TDR programs are therefore used to avoid having to reiterate planning constraints (and therefore pay out money for compensation), by allowing landowners to transfer and use their development rights on receiving areas.

The second reason concerns the creation of a reserve of public areas for public facilities and services without having to use eminent domain powers and public funds (see Section 2.2).

These practical reasons were mentioned by all interviewees as primary. By contrast, according to them, generally speaking the transfer of development rights is not adopted (mainly or at all) for ethical reasons, such as guaranteeing a treatment of all landowners more equal than with traditional planning mechanisms. Ethical reasons, when mentioned, were considered of secondary importance. The only exception was Milano. According to Simona Collarini (Head of the Planning Office, Milano, personal communication, 6 March 2017): “the reason which led us to adopt and apply the transfer of development rights was to overcome the unequal treatment produced by the previous urban plan, which had somehow exacerbated land rent [...]. Private property was treated in different ways [...]. The 2012 plan instead made the choice of a different planning culture, towards equality of all properties falling within the city’s boundaries”.

#### *Designation of sending and receiving areas*

The second aspect concerns the identification of sending and receiving areas. In all our case studies, both sending and receiving areas are always identified as specific pieces of land. Hence, the transfer does not refer limitless to all the municipal areas (on reasons why the precise identification of sending and receiving areas would be necessary, see Micelli, 2016)..

The main differences among cities have to do with the quantity and quality of sending and receiving areas. In all the case studies, sending areas were areas that the municipalities wanted to obtain and zone for public services such as parks, open spaces and sport facilities or to preserve their landscape and natural values.<sup>7</sup> To

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<sup>7</sup> An exception is Lecco, where the municipality wants to obtain riverside areas subject to hydrogeological risk.



be stressed is that, generally speaking, the acquisition process by a municipality does not prioritize any specific area. However, in some cases it is used in a more targeted way to obtain certain areas identified by the municipality as priority areas. This is the case of Bergamo where, among the many sending areas, the municipality aims at acquiring first those that form a specific park (Parco della Trucca); thus, it encourages (informally) developers to buy rights in that zone. However, the municipality has not yet adopted a specific and formal tool to achieve this aim.

Receiving areas are more diversified. In some cases, it is possible to use transferable rights only in specific major development areas (this is the case of the so-called ‘Transformation Areas [*Ambiti di Trasformazione*]’ in Bergamo); in other cases (e.g. Pavia and Lecco), the development rights can be transferred to a large number of areas (with few exceptions, such as the historical part of the city).

#### *TDR allocation rate*

The third aspect concerns development rights generation in sending areas. The allocation rate is the number of ‘TDR credits’ generated by an area (which, in Italy, correspond to the development ratio), and which landowners are permitted to sell. In some cases, different areas have different ratios and generate a different amount of rights per square metre of land. The different ratios are determined, more or less explicitly, on the basis of the value of sending areas. More valuable areas have therefore a higher ratio than less valuable areas. The number of different ratios determined for all the sending areas is usually low (three in the case of Bergamo, Brescia and Varese; four in the case of Sondrio). In all other cases there is a single development ratio for all sending areas. For example, in the case of Milano, all sending areas have the same 0.35 m<sup>2</sup>/m<sup>2</sup> ratio, while Pavia has a 0.1 ratio; Cremona had a 0.30 ratio between 2002 and 2013; in 2017 Monza has introduced a 0.2 ratio. It is interesting that there is no standardization in the ratios attributed to sending areas in the cities that we analysed: they range from 0.05 in Lecco to 0.70 in Sondrio, with average ratios between 0.20 and 0.30 m<sup>2</sup>/m<sup>2</sup>.<sup>8</sup>

#### *Destiny of sending areas*

The fourth aspect regards destiny of sending areas. With regard to this aspect, it is possible to identify two types of program. The first type, more widespread in Italy, is that of generalized TDR programs which require landowners to relinquish for free their sending areas to the municipality, which can use them for public services.

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<sup>8</sup> What characterises all the TDR programs analysed is the fact that the transfer ratio is always equal to one. “The transfer ratio describes the numerical relationship between the amount of development potential that may be severed from the sending site and the amount of additional development allowed on a receiving site” (Linkous, 2016, p. 164). When the transfer ratio is equal to one, the amount of development potential severed from a sending area corresponds to the amount of development potential which can be ‘used’ in a receiving area. In many cases, TDR programs in the United States use enhanced transfer ratio.

In the second type, sending areas transfer their development potential but are not relinquished to the municipality and remain private property. This is the case, less common, of Brescia and Varese. Sending areas, 'emptied' of their development rights, cannot be developed; landowners are legally bound to keep and maintain those areas as green and open spaces at agreed quality standards. This latter case is very similar to what happens in many TDR programs in the USA, where, once the TDR credits have been severed and sold, a conservation easement is placed over the sending area (Linkous, 2016). This allows the municipality to save on maintenance costs while, at the same time, achieving its objective to preserve sending areas as green.<sup>9</sup>

#### *The mandatory nature of TDR*

The fifth aspect concerns the mandatory nature of generalized TDR. In only two cases is it mandatory to buy development rights from sending areas (which are consequently given up for free to the municipality) in order to carry out development in receiving areas. This is the case of Bergamo, where TDRs must contribute at least 10% of the total floor area of major development sites (the so-called 'Transformation Areas'). The same applies in the case of Varese, where this share is equal to 30%. In other cases, buying development rights from sending areas is not mandatory; it determines additional floor area, which adds to a basic development ratio defined by the plan. This building bonus can also be obtained in other ways, such as building social housing or energy efficient and sustainable buildings as a component of the development. This is, for example, the case of Milano. Therefore, it is up to the developer to decide whether to carry out the development with its basic development ratio or to increase it by means of different options (e.g. social housing, transfer of development rights and so on). It is important to stress that, in some programs, buying development rights from sending areas (and consequently relinquishing sending areas) can also be avoided in favour of a procedure called 'monetization'[*monetizzazione*]. In this case, instead of buying development rights and giving up areas for free, the developer pays an amount of money equal to the value of the areas that it would have had to relinquish (the value is determined by the municipality). This is the case of Brescia, Varese and Sondrio, for instance.

#### *TDR market*

The sixth aspect concerns the market of transferable development rights. In some cases, development rights are freely marketable in the same way as those for any other immovable assets (e.g., land), that is, they can be bought, exchanged and sold even in the absence of a specific and determined development. This is the case of Milano, where, due to the specific structure of the transfer of development rights, together with the

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<sup>9</sup> In Italy, it would have been impossible to achieve this objective with traditional planning mechanisms (apart from expropriation) such as preserving agricultural land use. In fact, agricultural land use always allows for limited development ratios.

characteristics of land and housing markets (the latter is the largest and most dynamic in Italy),<sup>10</sup> a development rights market has rapidly emerged since the introduction of the program, with developers and real estate agents specializing in buying and selling development rights (Simona Collarini, head of the planning office of Milano, personal communication, 6 March 2017). Currently, only 10% of total development rights generated by sending areas (about 70/75,000 square metres) have concretely materialized in a development site; the remaining part has been exchanged for economic purposes, in light of future development projects or as a speculative activity (Fabio Visintin, head of the Office for the management of urban planning of Milano, personal communication, 6 March 2017). This possibility of free marketable rights exists on paper also in other cities but, due to the more static nature of the housing market and its small size, a self-standing development rights market has yet to emerge. As a result, in these cities development rights are bought only if they can be immediately transferred and used in a specific development site; the TDR market is thus intrinsically connected to the wider housing market.

To be stressed is that the creation of a self-standing TDR market can also be hampered by the specific structure of the TDR program. This happens when the ‘life’ of transferable development rights is strictly linked to their use in relation to a specific development site. This is the case of Monza, where development rights can be bought and sold only in relation to a specific development. If that specific development site is not carried forward for any reason, development rights bought in relation to it vanish and cannot be sold, transferred and used elsewhere.

By means of the interviews we were able to gather official data from 8 of the 10 municipalities that have adopted a generalized TDR program.<sup>11</sup> Data in Table 1 above show that Cremona in the years from 2002 to 2013 and Milano since 2014 have been the two cities able to obtain a larger amount of areas for free: respectively 390,000 and 216,726 square metres. Other cities, such as Sondrio, Bergamo, Monza and Varese, have been able to obtain much less, ranging from 9,000 to just over 12,000 square metres. There are also cases in which, although the TDR program is in force, no transfer of development rights has yet happened (e.g. Pavia and Lecco).

### *The role of the public authority*

The seventh aspect concerns the role of the municipality. In all the cases that we analysed, the municipality has a facilitating role in relation to the process, specifically connecting supply and demand of transferable development rights. However, the way in which this happens varies considerably, even though it is usually

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<sup>10</sup> As highlighted by all the interviewees, the buoyancy of the housing market is a fundamental factor in the success of a TDR program. For a discussion, see Section 5.

<sup>11</sup> Availability of such data is strictly connected to the existence of some form of TDR registration, which, unfortunately, is not a consolidated practice (see section on role of public authority).

informal and not fully transparent. For example, there are only three cases (Milano, Sondrio and Varese) where an online and easily accessible TDRs register [*Registro dei diritti edificatori*] has been established, although it is compulsory under regional law. In all other cases a TDRs register does not exist, even though the transfer of development rights has been the practice for several years. Moreover, where it exists, the TDRs register lists only transactions of development rights, while, for example, there is no easy way to access information on sending areas, their location, owners, and development potential. Bits of such essential information can be found in specific documents of the urban plan, which however are not always straightforward to find and do not contain all the essential information (e.g. information on landowners, or on whether transferable rights are still available in a specific area or have been sold). In the absence of official and easily accessible documents and information, the municipality's role in fostering a match between supply and demand of rights is quite informal: it occurs only through direct personal contacts of real estate developers with the city's planning department.

## **5. Discussion: the success of the transfer of development rights in Lombardy, its hampering factors and its relevance to the international debate**

The detailed analysis of TDR programs in the capital cities of Lombardy sheds light on several interesting aspects of the transfer of development rights. This makes it possible to enrich (and, in certain cases, also to correct) the international debate on TDR.

The first finding of our analysis is that, differently from what some authors have argued (see e.g. Nelson *et al.*, 2012; Renard, 2007), the transfer of development rights is not a residual practice; on the contrary, it has become, at least in the main capital cities of the Lombardy region, a routine planning tool. This is particularly true in regard to its simplest form, the 'localized transfer of development rights' which is always used in conjunction and as part of clearly defined development schemes. However, also the more complex form, the 'generalized transfer of development rights', is currently in place in the majority of the capital cities surveyed (9 out of 12).

Obviously, the fact that the transfer of development rights is widespread in the Lombardy region does not necessarily mean that it works efficiently, i.e. that it has stimulated a smooth and broad trade of transferable rights. In this regard, we must admit that a precise and comprehensive assessment of the transfer of development rights in Lombardy is not yet possible. Many TDR programs have been recently adopted; moreover, they began in the midst of the deep crisis of the real estate market in Italy. Despite this fact, two specific cases considered in our research allow the formulation of preliminary thoughts on the functioning of TDR in Lombardy.

The first is the case of Cremona, where the transfer of development rights was in place from 2002 to 2013. According to Marco Masserdotti (head of the planning office of Cremona, personal communication, 21 March 2017), the mechanism worked very well from 2002 to 2009, so that the Municipality was able to acquire a significant number of sending areas; after 2009 it slowed down, while the economic crisis grew increasingly severe. Nonetheless, the TDR program achieved its main goal, i.e. the public acquisition of a large number of areas for public services and facilities. It was then cancelled in 2013 because the areas obtained by the municipality were excessive for its needs and management capacity. The case of Cremona suggests that the generalized transfer of development rights can work smoothly when the real estate market operates in an ‘ordinary’ way. This can happen also in a relatively small town like Cremona, where the real estate market has never been particularly dynamic (even before the crisis).

The second case is that of Milano, which is characterized by an active real estate market (in 2016 Milano accounted for 71% of all transactions in the twelve capital cities in Lombardy) (Agenzia delle Entrate, 2017). Adoption of the transfer of development rights in Milano is quite recent (it started in September 2014); nevertheless, several development rights have been traded. As of March 2017, around 75,000 sq.m. of transferable development rights had been already bought (corresponding to around 217,000 sq.m of sending areas ceded to the Municipality). However, only a minority of these transferable rights materialized in a building project (just around 10%; Fabio Visintin, head of the Office for the management of urban planning of Milano, personal communication, 6 March 2017). The rest had been only purchased and traded, like any other good. The case of Milano confirms the importance of a dynamic real estate market in order to guarantee the proper operation of a TDR program. It also highlights that ‘internal factors’ can contribute decisively to the success of a program.<sup>12</sup> In particular, the possibility to trade the transferable rights also without ‘materializing’ them in a building project (as required, on the contrary, by other TDR programs in Lombardy) is a fundamental feature of the program in Milano, crucial for 90% of transactions.

Our analysis reveals that there are two other ‘internal’ factors pivotal in determining the success (or the failure) of a program. The first factor concerns the conditions for use of transferable development rights. In many cases, in fact, these conditions discourage the trade of development rights. We refer in particular to the possibility to opt for ‘monetization [*monetizzazione*]’ instead of transfer. In some cases, in fact, in order to obtain a bonus density, developers can pay a fee equivalent to the value of transferable development rights that they should buy from a sending area, instead of actually buying those rights. This possibility is granted by the majority of TDR programs of capital cities in Lombardy. On paper, monetization makes sense in some specific instances: for example, a small building project where the sending area to be ceded to the municipality is tiny. In such cases, in fact, the municipality has little interest in obtaining very small plots; at

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<sup>12</sup> By ‘success’ we mean that the program achieves its declared goals. One of the main goals of all the TDR programs in Italy is the public acquisition of land without any direct public disbursement. Obviously, such declared goals can be criticized *per se*; also unintended negative outcomes could emerge from the program. However, we will not deal with these issues in this paper.

the same time, this allows small private developers to avoid the procedures related to the transfer of development rights, which may be lengthy and complex. However, monetization seems to be a strong disincentive to the use of transferable development rights. In fact, many developers may prefer monetization – which is a simple, linear and well-known mechanism, and allows them to reduce transaction costs (i.e. finding, negotiating and buying actual TDRs) – to embarking on the more complex procedure of transferring development rights.<sup>13</sup> Furthermore, the possibility to opt for monetization means that the maximum price of development rights is set by law by the public authority. In fact, in order to be advantageous for buyers, a TDRs credit must cost less than the equivalent price set by the municipality if one opts for monetization. However, the public determination of maximum TDR prices can discourage the development of a market of TDRs (by discouraging landowners of sending areas from selling their credits), in particular if the price set by the public authority is too low.

Note also that, in several cases, not only is it possible to opt for monetization instead of transferring development rights; it is also not compulsory to use the transfer of development rights in order to obtain a building bonus. For instance, some municipalities provide building bonuses also in different circumstances, e.g. if a part of the building is allocated to social housing. Only in the cases of Bergamo and Varese are developers *obliged* to use the transfer of development rights: if they want to develop specific areas, they must acquire a part of the development rights they need through the transfer (amounting to 30% of the building surface in the case of Varese, and 10% in the case of Bergamo).

The second internal factor which hinders the transfer of development rights is the role of public authorities. In all the capital cities of Lombardy, the public authority has only the role of ‘accountant’; that is, it registers the transactions of development rights in the TDRs register. In this regard, two points are to be stressed. Firstly, even if, according to the law, all municipalities must establish a public register of TDRs, only three cities (Milano, Sondrio and Varese) have one. In the other cases, this register has not been yet established because, according to our interviewees, it is still not necessary because few transactions take place. However, it is worth stressing that even in Cremona, where a large number of development rights were bought and sold between 2003 and 2012, a public register has never existed. Secondly, public authorities in Lombardy never connect supply and demand of TDRs in a clear and transparent manner – even if this seems to be crucial for the effective operation of TDR programs. This could be done, for instance, by establishing an easily accessible public archive of sending areas, containing useful details such as landowners and how many transferable rights each area can generate. In the programs that we considered, in the best cases sending areas were identified in a specific document of the local plan; however, this document is rather difficult to find and, in any case, it just identifies the localization of sending areas, without any details on size and ownership.

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<sup>13</sup> This is, for instance, what happened in the case of a TDR program promoted by Charlotte County (Florida, United States), where developers of small projects opted for monetization to avoid the hassle of buying actual TDRs (Rick Pruetz, 2017, October 17, personal communication).

Then, this document is not updated, so that it is not possible to know if a specific sending area has already been ‘emptied’ of its development rights. As several heads of planning departments confessed, the process of matching supply and demand often takes place informally: the technical office indicates the sending areas still available and the landowners more inclined to sell in that period. However, this results in non-transparent practices (Goggi, 2014), which can discourage recourse to the transfer of development rights by real estate developers with less personal connections within the technical office.

With reference to the role of public authorities, another question is worth stressing. In the literature on TDRs, several authors have emphasized the fundamental role that, in their opinion, the TDR Bank would play in triggering the trade of transferable development rights. The TDR Bank, managed by the public authorities, should buy development rights from sending areas even in the absence of a private demand for them. We do not intend to discuss here alleged potential benefits and problems of the TDR Bank (on this issue, see: Carlo and Wright, 1977; Costonis, 1973; Pizor, 1986; Stevenson, 1998). We wish only to stress that, in the two most successful cases that we analysed (Cremona and Milano), the market of development rights started and worked also in the absence of a TDR Bank. Moreover, none of the programs that we investigated has taken into consideration its establishment, for instance due to the public investment that the TDR Bank would need in order to operate.

Except for the questions of monetization and lack of a proactive role by the municipality to facilitate the matching of development rights supply and demand, no other internal elements emerge which hinder TDR programs. In the majority of cases, in fact, the design of TDR programs is quite accurate and does not seem to pose further threats to successful transfers. In this respect, the case of Monza is paradigmatic. The TDR program in force in Monza between 2007 and 2013 was designed in a very complicated way. The program divided sending areas’ development rights into 25% residential and 75% non-residential. Therefore, if a developer wanted to carry out a residential development, he had to buy a sending area (and relinquish it to the municipality), but could only use 25% of the development rights of that area (that is, the residential share). The remaining 75% (non-residential share) could not be used for residential development, nor sold, nor moved to another (non-residential) area. Consequently, the costs of the process increased considerably, due to the acquisition of great amounts of unnecessary (non-residential) development rights. It is clear that a structure like this can irreversibly hinder a TDR program (Daniela Perego, head of the office for detailed planning in Monza, personal communication, 6 April 2017). The case of Monza is the only one of this kind that we have found in our study, and Monza reformed the regulations of its TDR program in 2013 in order to solve these issues.

## **6. Conclusions**

The concept and practice of the transfer of development rights (TDR) has been implemented already for several decades in many countries, such as the United States. It raised some enthusiasm when it was initially formulated and implemented (Rose, 1975); even today, despite being no longer a novelty, it is still considered to be promising (Nelson *et al.*, 2012). The main reason for this resides in its ability to solve problems related to more traditional forms of urban planning (e.g. it is a compensation or mitigation mechanism for regulatory taking). However, it has never become an ordinary tool for public authorities' planning practice; this is due, for instance, to the fact that there are a number of very specific conditions (endogenous and exogenous to the program itself) which are needed in order for the transfer of development rights to work smoothly and effectively (see Kaplowitz *et al.*, 2008). Against this backdrop, many scholars have revisited the initial enthusiasm and stressed the fact that TDR programs, in many cases, have been disappointing and with a very limited impact (Dadder, 1997; Juergensmeyer *et al.*, 1998; Renards, 2007).

This picture, which is based mainly on research on TDR programs in the United States, does not take the Italian experience into consideration. In Italy, during the past two decades, the transfer of development rights has spread rather quickly. In many cases, a specific kind of transfer of development rights has been practiced in Italy, which we have defined here 'localized-TDR'. This is a simple and unambitious form: a very small number of landowners (or just one) and few contiguous properties are involved; development rights are simply moved spatially, rather than traded. However, simultaneously, even if at a slower pace, a more complex, ambitious and sophisticated version of the transfer of development rights – similar to many TDR programs in the USA – has started to be implemented in some parts of Italy (Colavitti and Serra, 2017; Micelli, 2002). We called this 'generalised-TDR': in this case, a higher number of areas and landowners are involved, and a real market of development rights appears. From this viewpoint, the case of the Lombardy region is exemplary. Today, 9 provincial capital cities out of 12 are implementing a generalized-TDR program. As we have argued in the present paper, these programs differ for several features; nevertheless, their diffusion testifies to the popularity of this planning mechanism among municipalities in Lombardy. In fact, the generalized transfer of development rights allows land use planning to avoid some ordinary issues for Italian planning, such as the expiration of planning-imposed land use restrictions and financial obstacles in acquiring areas for public services and facilities. The spread of TDR programs in Lombardy *per se* makes it possible to enrich the international debate on this planning tool, challenging a certain view that alludes to its stagnation; at the same time, this stresses the potential of the concept of transferable development rights, which is able to adapt to different institutional contexts, and helps solve specific problems related to traditional forms of planning.

However, we must admit that a complete assessment of TDR programs in the Lombardy region is not yet possible. This is not due solely to the fact that many of them have been implemented very recently. It also relates to the fact that they have been adopted in the midst of the deep economic crisis in Italy, which has hit



the real estate market in particular. The crisis implies that, in the majority of cases, a very limited number of significant real estate operations have been carried on in recent years in the capital cities of Lombardy. Consequently, few development rights have been transferred. However, two major exceptions exist, which we have analysed in this paper. The first is the case of Cremona, a town in the southern, rural part of the region: a generalised transfer of development rights was adopted in 2002, before the crisis began; hence, it was able to operate in an ‘ordinary’ period. The TDR program of Cremona worked smoothly and efficiently; several development rights were transferred; and the Municipality was able to reach its goal of acquiring many areas for public facilities and services. The second exception is the case of Milano. The transfer of development rights started to operate in 2014. However, the relative buoyancy of the real estate market in Milano and clear signs of recovery from the crisis have allowed the TDR program to work smoothly. The analysis of these two ‘successful’ cases, together with the other examples in Lombardy, suggests that TDR programs can work efficiently in Italy under certain conditions. We are referring not only to ‘external conditions’, that is to the situation of the real estate market, whose buoyancy is a necessary success factor. We are referring to ‘internal conditions’ as well. In fact, some aspects of the current design of certain TDR programs seem to hinder their operation. Two hindering factors in particular emerged from our analysis. The first is the possibility to pay a fee instead of buying transferable rights from a sending area (this is the so-called ‘monetization [*monetizzazione*]’). The second is the weak role of public authorities in linking the supply and demand of transferable development rights. On the contrary, other factors which have attracted a certain academic attention, such as the TDR Bank, do not seem to have a significant role in the effective operation of TDR programs in Italy.

Overall, the transfer of development rights appears to be a planning tool that might have a certain success in Italy when the economic crisis is over – in particular if it is designed ‘correctly’ in order to enhance its potential and avoid negative outcomes. This does not mean that the transfer of development rights will become the primary tool used by local administrations in implementing land use plans. As it has been convincingly argued by Micelli (2016), in fact, TDR programs in Italy are likely to remain a niche tool, to be used for specific areas and limited purposes, next to other more ordinary planning tools. Despite this fact, they appear to have a good potential, and might also be a driver of innovation in land use planning in Italy as testified by the case of Milano.

## References

- Agenzia delle Entrate, 2017. Osservatorio del mercato immobiliare. Volumi di Compravendita. Compravendite immobili residenziali. (The Revenue Agency). Available at: <http://www.agenziaentrate.gov.it/wps/content/Nsilib/Nsi/Documentazione/omi/Banche+dati/Volumi+di+compravendita/>
- Barrese, J.T., 1985. Efficiency and Equity Considerations in the Operation of Transfer of Development Rights Plans. *Land Economics*, 59 (2), 235-241. <https://doi.org/0.2307/3146051>.
- Camagni, R., 2014. Perequazione urbanistica ‘estesa’, rendita e finanziarizzazione immobiliare: un conflitto con l’equità e la qualità territoriale. *Scienze Regionali*, 13 (2), 29-44. <https://doi.org/10.3280/SCRE2014-002003>.
- Camagni, R., 2015. Perequazione urbanistica estesa: riflessioni e valutazioni due anni dopo. *Archivio di Studi Urbani e Regionali*, 114, 164-166.
- Carlo, C., Wright, E.R., 1977. Transfer of Development Rights: A Remedy for Prior Excessive Subdivision. *UC Davis Law Review*, 10, 1-30.
- Carmichael, D.M., 1974. Transferable Development Rights as a Basis for Land Use Control. *Florida State University Law Review*, 2, 35-107
- Chiodelli, F., 2016. Equal treatment in land use planning: investigating the ethics of the transfer of development rights. *Scienze Regionali – Italian Journal of Regional Science*, 15 (1), 131-138. <https://doi.org/10.3280/SCRE2016-001007>.
- Chiodelli, F., Moroni, S., 2015. Corruption in land-use issues: a crucial challenge for planning theory and practice. *Town Planning Review*, 86(4), 437-455. <https://doi.org/10.3828/tpr.2015.27>
- Chiodelli, F. Moroni, S., 2016. Zoning-integrative and zoning-alternative transferable development rights: compensation, equity, efficiency. *Land Use Policy*, 52, 422-429. <https://doi.org/10.1016/j.landusepol.2016.01.006>
- Cho, C.J., 2002. The Korean growth-management programs: issues, problems and possible reforms. *Land Use Policy*, 19 (1), 13-27. [https://doi.org/10.1016/S0264-8377\(01\)00035-7](https://doi.org/10.1016/S0264-8377(01)00035-7).
- Clinch J.P., O’Neill, E., 2010. Assessing the Relative Merits of Development Charges and Transferable Development Rights in an Uncertain World. *Urban Studies*, 47 (4), 891-911. Doi: 10.2307/43079879.
- Colavitti, A. M., Serra, S., 2017. The transfer of development rights as a tool for the urban growth containment: A comparison between the United States and Italy. *Papers in Regional Science*. <http://dx.doi.org/10.1111/pirs.12295>.
- Chomitz K.M., 2004. Transferable Development Rights and Forest Protection: An Exploratory Analysis. *International Regional Science Review*, 27 (3), 348-373. <https://doi.org/10.1177/0160017604266030>
- Costonis, J.J., 1973. Development Rights Transfer: An Exploratory Essay. *The Yale Law Journal*, 83: 75-128. <https://doi.org/10.2307/795319>.

- Dadder, J.C., 1997. TDRs: great idea but questionable value. *The Appraisal Journal*, 65 (2), 133-142.
- De Carli, M. (ed.), 2012. *La libera circolazione dei diritti edificatori a Milano e altrove*. Milano: Franco Angeli.
- Gabriel, A., Freeman, D.B., 1986. Transferable development rights in urban Canada: a case study of Toronto. *East Lakes Geographer*, 21, 11-23.
- Gale, D.E., 1977. The transfer of development rights: some equity considerations, *Urban Law Annual*, 14 (1): 81-100.
- Giordano, M., 1987. Over-Stuffing the Envelope: The Problems with Creative Transfer of Development Rights. *Fordham Urban Law Journal*. 16 (1), 43-67.
- Goggi, G., 2014. Il PGT di Milano, perequazione, diritti edificatori e diritti dei cittadini. *Scienze Regionali*, 13 (2), 87-100. <https://doi.org/10.3280/SCRE2014-002007>.
- Henger, R., Bizer, K., 2010. Tradable planning permits for land-use control in Germany. *Land Use Policy*, 27, 843-852. <https://doi.org/10.1016/j.landusepol.2009.11.003>.
- Hin Li, L., Gan, L., 2013. Conserving the heritage in Chongqing by market forces: the feasibility of adopting TDR in China. *Journal of Cultural Heritage Management and Sustainable Development*, 3 (1), 18-34. <https://doi.org/10.1108/20441261311317383>.
- Istat, 2013. Superfici delle unità amministrative a fini statistici. Retrieved from: <https://www.istat.it/it/archivio/82599>
- Istat, 2017. Popolazione residente al 1 gennaio 2017. Retrieved from: [http://dati.istat.it/Index.aspx?DataSetCode=DCIS\\_POPRES1&Lang=it](http://dati.istat.it/Index.aspx?DataSetCode=DCIS_POPRES1&Lang=it)
- Janssen-Jansen, L.B., 2008. Space for Space, a transferable development rights initiative for changing Dutch landscape. *Landscape and Urban Planning*, 87, 192-200. <https://doi.org/10.1016/j.landurbplan.2008.06.002>.
- Jin, G.J., Dai, J., 2010. Discussion on Taiwan transfer of development right institution. *Urban Planning International*, 25 (4), 104-109
- Johnston, R.A., Madison, M.E., 1997. From Land marks to Landscapes: A Review of Current Practices in the Transfer of Development Rights. *Journal of the American Planning Association*, 63 (3), 365-378. <http://dx.doi.org/10.1080/01944369708975929>.
- Juergensmeyer, J. C., Nicholas, J.C., Leebrick, B.D., 1998. Transferable Development Rights and Alternatives After *Suitum*. *Urban Lawyer*, 30, 441-475.
- Kaplowitz, M.D., Machemer, P., Pruetz, R., 2008. Planner's experiences in managing growth using transferable development rights (TDR) in the Unites States. *Land Use Policy*, 25, 378-387. <https://doi.org/10.1016/j.landusepol.2007.07.004>

- Linkous, E. R., 2016. Transfer of development rights in theory and practice: The restructuring of TDR to incentivize development. *Land Use Policy*, 51, 162-171. <https://doi.org/10.1016/j.landusepol.2015.10.031>.
- Lloyd, G., 1961. Transferable Density in Connection with Zoning. *Technical bulletin no.40*. Washington: Urban Land Institute.
- McConnell, V., Walls, M., 2009. U.S. Experience with Transferable Development Rights. *Review of Environmental Economics and Policy*, 3 (2), 288-303. <https://doi.org/10.1093/reep/rep008>.
- Menghini, G., Gemperle, F., Seidl, I., Axhausen, K. W., 2015. Results of an agent-based market simulation for transferable development rights (TDR) in Switzerland. *Environment and Planning B: Planning and Design*, 42(1), 157-183. <https://doi.org/10.1068%2Fb120066p>.
- Mengoli G. (2014). *Manuale di diritto urbanistico*. Milano: Giuffrè.
- Micelli, E., 2002. Development Rights Markets to Manage Urban Plans in Italy. *Urban Studies*, 39 (1), 141-154. <https://doi.org/10.1080%2F00420980220099122>.
- Micelli, E., 2004. *Perequazione urbanistica. Pubblico e privato per la trasformazione della città*. Venezia: Marsilio.
- Micelli, E., 2011. *La gestione dei piani. Perequazione, accordi, incentivi*. Marsilio, Venezia.
- Micelli, E., 2014. Cinque problemi intorno a perequazione, diritti edificatori e piani urbanistici. *Scienze regionali*, 3 (2), 9-28. <https://doi.org/10.3280/SCRE2014-002002>.
- Micelli, E., 2016. I diritti edificatori per il governo del territorio: strumento generalizzato o tecnica di nicchia? *Scienze regionali*, 15 (1), 123-130. DOI: 10.3280/SCRE2016-001006
- Moore, A., 1975. Transferable Development Rights: An Idea Whose Time Has Come. In: Rose J.G. (Ed.), *The Transfer of Development Rights. A New Technique of Land Use Regulation*. Center for Urban Policy Research, New Brunswick, pp. 221-232 and 337-341.
- Moroni, S., 2012. Diritti edificatori trasferibili e regole d'uso del suolo. Appunti in margine ad un libro di Ezio Micelli. *Scienze Regionali*, 11 (3), 123-134. <http://doi.org/10.3280/SCRE2012-003007>,
- Moroni. S., 2014. Considerazioni critiche su diritti e indici di edificazione. *Scienze Regionali*, 13 (2), 59-72. <http://dx.doi.org/10.3280/SCRE2014-002005>.
- Nelson, A.C., Pruetz, R., Woodruff, D., Nicholas, J.C., Juergensmeyer, J.C., Witten, J., 2012. *The TDR Handbook. Designing and Implementing Transfer of Development Rights Programs*. Washington: Island Press.
- Pizor, P., 1986. Making TDR Work: A Study of Program Implementation. *Journal of the American Planning Association*, 52(2), 203-211. <http://dx.doi.org/10.1080/01944368608976620>.
- Pruetz R., Pruetz, E., 2007. Transfer of Development Rights Turns 40. *Planning & Environment Law*, 59 (6), 3-11. <http://dx.doi.org/10.1080/15480755.2007.10394447>.

- Pruetz, R., Standridge, N., 2009. What Makes Transfer of Development Rights Work? Success Factors From Research and Practice. *Journal of the American Planning Association*, 75 (1), 78-87. <http://dx.doi.org/10.1080/01944360802565627>.
- Renard, V., 2007. Property rights and the 'transfer of development rights. Question of efficiency and equity. *Town Planning Review*, 78 (1), 41-60.
- Richman H.J., Kending L.H. 1977. Transfer Development Rights. A Pragmatic View. *The Urban Lawyer*, 9, 571-587.
- Rose, J.G., (Ed.), 1975. *The Transfer of Development Rights. A New Technique of Land Use Regulation*. Center for Urban Policy Research, New Brunswick, pp. 259-264.
- Shih, M., Chang, H. B., 2016. Transfer of development rights and public facility planning in Taiwan: An examination of local adaptation and spatial impact. *Urban Studies*, 53(6), 1244-1260. <https://doi.org/10.1177/0042098015572974>
- Stanghellini, S., 2013. *Perequazione, compensazione, fattibilità*. Roma: Inu Edizioni.
- Stevenson, S.J., 1998. Banking on TDRs: the Government's Role as Banker of Transferable Development Rights. *New York University Law Review*, 73, 1329-1376.
- Strugar, M. D., 1985. Transferable Development Rights: Robbing Peter to Pay Paul? *University of Detroit Law Review*, 62 (4), 633-658.
- Thorsnes, P., Simons, G.P.W., 1999. Letting the market preserve land: the case for a market-driven transfer of development rights program. *Contemporary Economic Policy*, 17 (2), 256-266. <https://doi.org/10.1111/j.1465-7287.1999.tb00680.x>.
- Walls M., McConnell, V., 2007. *Transfer of Development Rights in U.S. Communities. Evaluating Program Design, Implementation and Outcomes*. Washington: Resource for the Future.
- Wang, H., Tao, R., Wang, L., Su, F., 2010. Farmland preservation and land development rights trading in Zhejiang, China. *Habitat International*, 34 (4), 454-463. <https://doi.org/10.1016/j.habitatint.2009.12.004>.
- Woodbury, S., 1973. Transfer of Development Rights: A New Tool for Planners. *Journal of the American Planning Association*, 41(1): 3-14. <http://dx.doi.org/10.1080/01944367508977509>.
- Zhu, J., 2004. From Land Use Right to Land Development Right: Institutional Change in China's Urban Development. *Urban Studies*, 41 (7), 1249-1267. <https://doi.org/10.1080%2F0042098042000214770>.