

Transfer of Development Rights: Technical Note

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Note on US measurements:

one square foot = 0.0929 square meters

one acre = 0.405 hectares

Abbreviations:

FAR floor area ratio

PDC Pineland Development Credits

TDR transferable development rights

ZLM zone lot merger

Executive Summary

1. At the heart of a transferable development rights (TDR) program lies a simple concept. Vulnerable land and buildings (in the *sending* area) can be protected from being destroyed by development by persuading their owners *voluntarily* to accept restrictions on their ability to undertake legally permitted development and in return receive credits which can be sold to developers (in the *receiving* area). The revenue received from the sale of TDRs compensates owners in the sending area for the restrictions they have voluntarily placed on the development of their property and its consequential diminution in its value. Developers are able to use the credits to construct at a higher density in the receiving area than would otherwise be permitted, thereby recovering the cost of acquiring TDRs. Receiving areas must have the infrastructure in place and capacity to accept a greater density of development, and their populations the willingness to do so.

2. Most TDR programs are aimed at achieving at least one of the following:

- The preservation of historical buildings, landmarks, and streetscapes in urban areas - see for instance Washington DC (Section 3.1.1) and New York City (Section 3.1.2);
- The protection of farmland and rural areas from development – see for instance Montgomery County, Maryland (Section 3.2.1) and King County, Washington (Section 3.2.2);
- The protection of environmentally sensitive areas from development – see for instance Pinelands, New Jersey (Section 3.2.3); or

- To achieve improvements in urban design and the quality of urban areas – see for instance Cupertino, California (Section 3.3).

3. Most examples of TDR programs are to be found in the USA, with 239 having been identified by *The TDR Handbook*. However, the overwhelming majority of communities do not have a TDR program and not all proposed TDR schemes have come to fruition. The development of TDR programs in the USA has been aided by its common law system in which rights over land can be divided and owned separately. Covenants or easements may be imposed on future owners restricting their property rights so that owners of properties can possess different bundles of rights over their land from their neighbors. No special legislation is required to enable this to take place. Buyers are expected to carry out due diligence to establish the rights and restrictions associated with individual properties. TDR programs result in the imposition of easements on properties that do not change the ownership of the land, just the quantum of rights associated with the parcel. These do not prevent owners from living on the land or conducting a business from it. An owner voluntarily gives up part of the bundle of rights in exchange for transferable development rights.

4. TDRs can exist in countries with code systems of land law. They may require legislation to permit covenants or easements to be placed on properties for which compensation is paid in the form of a certificate that can be sold to a developer. TDRs programs may also require a change in attitudes on the part of owners so that they recognize that there is no absolute right of ownership and that the purchase of a property with an easement resulting from a TDR program restricts the rights of subsequent owners.

5. There is no national (federal) policy on TDRs in the USA, this being a matter for states and local communities to determine. TDR schemes vary considerably in the ways in which they are implemented in aspects such as how sending and receiving areas are defined, which properties qualify, the conditions with which owners receiving certificates under TDRs must comply, rates of compensation, whether the policy is supported by a TDR bank able to buy and sell certificates, and whether the TDR policy is supported through imposing additional local taxes. Each tends to reflect local circumstances.

6. Fundamental to the success of a TDR program is that there has to be demand for the credits generated. Receiving areas must be ones in which there is buoyant demand for development because occupiers and tenants seek premises in them. Governments manipulate demand to try to ensure that there is a ready market for the credits generated. This is generally done by setting floor to area ratios (FAR) levels in the receiving area at such a low level that viable development is only possible if the developer obtains TDRs. The approach is not successful if developers are able to find ways around the restrictions, such as seeking exemptions or obtaining bonus FARs by other means. However, greater density does not necessarily result in higher profits as there is no simple relationship between density of construction and profitability.

7. A TDR system can only flourish if zoning controls and covenants and easements can be enforced. It is difficult to envisage how a TDR system can function if developers can flout density regulations with impunity or if covenants and easements cannot be enforced. TDR systems cannot function if a country's land information systems are so poorly developed that it is not possible to know whether covenants have been breached or not. A country with an illegal building problem or one in which illegal intensification of development is possible without sanction is not in a position to introduce a TDR scheme.

8. It is tempting to view TDRs as a cost-free means of achieving policy objectives but this is inaccurate. The costs include those of registering TDRs and their transfer, enforcing easements and zoning conditions, and the operation of TDR exchanges and banks. Higher property taxes may have to be imposed to fund infrastructure in receiving areas and to service the debt raised to enable TDR banks to function. Effective TDR programs rarely function in isolation but are usually one element in a raft of policies.

9. TDR programs impose costs on receiving areas by increasing the cost of development in them. This implies a redistribution of wealth from receiving areas to sending areas. The actual distributional consequences vary between schemes and only empirical studies can identify which of many possible consequences result from a given TDR policy. Unlike a tax and subsidy policy that can be designed in such a way as to be equitable and ensure that the costs fall on those with the ability to pay, with a TDR policy the consequences are less clear and are not transparent.

10. TDR programs may not be cost effective. Credits may be most attractive to those owners in sending areas who have no intention or opportunity to develop their land. The credits may be a way by which they can release part of their equity. Credits may therefore be wasted and result in unnecessary additional development.

11. TDRs are not a device that can enable a government to expropriate property without paying compensation by granting owners deprived of their possessions with a certificate that can be sold to generate compensation. If anyone is deprived of his or her rights in the public interest then they should receive fair and timely compensation for their loss. In the USA this is provided by the Fifth Amendment to the US Constitution and in Europe by Article 1 of Protocol 1 of the European Convention on Human Rights. TDRs are of uncertain value that can vary according to the state of the property market. They do not provide for timely compensation as they have to be sold in order to realize their value and there may be no buyer for them. As such, TDRs can be argued to breach the fundamental principle of fair and timely compensation. If TDRs are compensation for accepting a voluntary agreement, this is not an issue since the owner does not have to enter into the agreement.

12. Any country considering introducing a TDR program should consider what it is trying to achieve as they are not "magic bullets" and often come with significant direct and indirect costs. There are usually alternative policies capable of realizing the same objectives which should be considered before deciding that a TDR program offer the best option.

1. Introduction

This study of transferrable development rights (TDRs) has been produced as part of the work undertaken for the World Bank Advisory Services & Analytics Project P164922, *Turkey Land Sector – Emerging Issues*, at the request of the Government of Turkey, specifically the Ministry of Environment and Urbanization (MoEU). Initial discussions on this task took place with the Ministry in October 2017. During following missions in January and April 2018, meetings were held with the MoEU, the General Directorate of Land Registry and Cadastre (TKGM), the Ministry of Culture and Tourism, İbank, the General Directorate of National Property, Istanbul Provincial Administration, and Istanbul Metropolitan Municipality. The research for the report has included desk-based studies of a number of TDR schemes and also field work in New York and Washington DC.

The study was undertaken because MoEU sought information on best international practice in this area. There have been discussions recently with potential uses of TDRs in Turkey. These include using them as a means of compensating owners of land acquired compulsorily, thereby avoiding having to find finance for expropriations. Owners of land being expropriated would receive a share of development rights in regeneration rather than the cash to acquire replacement properties.

The central question is what are the factors behind successful TDR programs that explain why they were effective and whether there are lessons which can be learned.

The main body of the report is in four sections. Section 2 explains what transferrable development rights (TDR) are and the key concepts and definitions. Section 3 comprises a series of case studies from USA examining some of the most highly regarded TDR schemes concerned with the protection of historic buildings, the preservation of the countryside and farmland, and urban design quality. There are relatively few TDR schemes from outside USA but those from Brazil and Mumbai are also considered. Section 4 discusses the legal issues that arise from TDR schemes and Section 5 the economic ones. Section 6 presents the conclusions from the study.

2. Transfer of Development Rights: Concepts and definitions

Transferable Development Rights programs (TDRs) are to be found predominantly in USA where there are more than 200 such programs¹. TDRs involve two areas: a *sending* area and a *receiving* area. Land owners in the sending area voluntarily enter into restrictions on their ability to exercise development rights over their properties. In return they receive TDRs that can be utilized in receiving areas. These can be sold to developers seeking to undertake developments in receiving areas. They are able to use them to construct at a higher density than would otherwise be permitted. Developers trade off the cost of acquiring TDRs against the enhanced value of the developments that they are able undertake. This implies that TDR programs can only function where there is demand for development in receiving areas. The cost of each TDR unit must be less than the profit a developer can make from using it to

¹ The TDR Handbook in 2012 found 239 TDR schemes in USA (Nelson et al, 2012). Since then it is believed that other jurisdictions have adopted TDR programs. Not all the TDR schemes are currently active.

develop more intensively in the receiving area. The revenue received from the sale of TDRs compensates owners in the sending area for the restrictions they have voluntarily placed on the development of their property and the consequential diminution in its value.

The typical objectives of TDR policy as practiced in USA are to protect areas of farmland from urban encroachment and areas of outstanding natural beauty or environmental importance from development. In urban areas historic buildings can be protected from demolition by the owners who are able to transfer the development rights of the land on which they stand to other parcels. Owners thereby obtain the benefits from redevelopment without actually demolishing historic buildings. Instead the development potential of the sites on which they stand is transferred to other properties where they can be used to enable more intensive development. Owners are compensated for not undertaking the development of their property by receiving TDR certificates that they are able to sell. Developments that would otherwise have taken place in the *sending* areas are directed towards *receiving* areas.

Receiving areas must have the infrastructure in place and capacity to accept a greater density of development, and their populations the willingness to do so. Essentially TDRs direct development away from areas which are unable to absorb it, for instance on environmental, cultural, or heritage grounds, and re-direct it towards areas which have the capacity to do so or where development is not considered to have damaging consequences. In many cases there are benefits from greater intensity of development by enabling economies of scale from fixed investment in infrastructure to be reaped. By encouraging higher density of development municipalities facilitate the provision of public transport and enable businesses to thrive which would not survive at lower population densities.

At the heart of TDRs are three voluntary acts. One is on the part of the land owner who freely accepts restrictions on his property. These can be density restrictions on development or an obligation to maintain a historic building. In USA the land owner in the sending area is not under any obligation to accept the restriction on his development rights beyond what has been put in place by zoning. He may be entitled to compensation if new zoning requirements restrict development. He only does so if he considers this to be appropriate and in his best interests. In other words, the restriction on development rights is not forced on the owner. TDRs are not compensation for compulsory acquisition of property or rights but result from a voluntary acceptance of restrictions.

The second voluntary act is that of a developer in a receiving area who decides that he wants to undertake a development there at a greater density than that normally permitted and finds it financially worthwhile to acquire the necessary TDRs to make this possible. It is important to recognize that TDRs use market mechanisms to achieve their results (McConnell et.al., 2007). There has to be demand on the part of developers to undertake a development in the receiving area. The development also has to be one that cannot be carried out within the prevailing zoning or density restrictions and so obliges the developer to acquire TDRs to enable the development to go ahead. The developer must consider that the cost of acquiring

the TDRs will, in his estimation, be compensated by the value of the additional development that can be undertaken.

The third voluntary act is on the part of the receiving community that must be willing to accept greater density of development. USA is a democracy. Development plans cannot be imposed on communities but have to be with their consent. With freedom of expression and association, the ballot box is not the only means through which communities can express their views about density of development. They can find ways of frustrating planners' and developers' proposals for greater density of development. Residents who moved to an area because of its quality of life may be very resistant to intensification of development changing the character of an area and, potentially, increasing congestion of facilities and infrastructure. They may not be persuaded by arguments about the need to preserve the countryside or historic buildings somewhere else or by arguments that greater development will increase property tax yields.

The technical note examines some of the best examples of TDRs in practice as well as considering some of the wider issues that any country thinking of introducing such a policy needs to take into consideration. The focus has been on the best schemes as there are also schemes that have failed to live up to expectations and do not achieve the hoped for results on the scale anticipated. "TDRs sound relatively simple in concept...but they have often been difficult to implement effectively in practice" (Walls and McConnell, 2007, p.8). Those considering whether to adopt TDR programs should be aware of the schemes that are small in scale, dormant, or have not fully met their objectives. There are also cases of local authorities with successful TDR schemes, whose neighbors' schemes have been disappointing. As most TDR schemes are to be found in USA, the examples are drawn pre-dominantly from that country. It is notable that TDRs are not found in other countries that share the USA's common law heritage, such as UK, Australia, and New Zealand. A consideration for any country contemplating introducing a TDR policy is whether its legal and institutional heritage is sufficiently similar to USA to make the policy feasible. There are other policies capable of achieving the outcomes TDRs are used to secure and a country needs to consider whether they are more appropriate or feasible.

3 Transferable Development Rights Case Studies

Most examples of TDRs being used in practice are to be found in USA. As was noted above, there are a large number of TDR programs in USA, with 239 having been identified in a survey undertaken for *The TDR Handbook* (Nelson et al, 2012). On the face of it this sounds like a substantial number except that the authors note that there are over 39,000 cities and counties in USA so that the overwhelming majority of communities do not have a TDR program. Washington DC and New York City, for instance, have TDR programs but Boston and Chicago do not. New Jersey has for the Pinelands but New York State does not for the Adirondacks, yet both areas are regarded as being ones of outstanding environmental quality. There is no national (federal) policy on TDRs, this being a matter for states and local communities. As the *Handbook* notes, in 2010 25 of the 50 states had adopted TDR enabling legislation, though another eight and the District of Columbia had active programs but no

enabling legislation. The state enabling legislation varies from brief grants of power, as in Colorado and Massachusetts, to statements of principles backed up by implementation and administrative processes and ordinances, as in New Jersey and Washington State. According to the *TDR Handbook*, North Carolina has an enabling statute but no local programs. The result of this permissive rather than prescriptive legal framework is that communities have been free to adopt or not to adopt TDRs according to whether the perceived benefits from a TDR program outweigh the expected costs of establishing and maintaining it. For most communities in USA, the answer would appear to be no, though whether this is misguided or not proponents of TDRs like the authors of the *Handbook* would take issue.

The lack of a national policy in the USA, and in most states the absence of a rigorously prescribed state policy, means that TDR schemes vary considerably in the way in which they are implemented. Individual cities and counties tend to pursue their own policies in areas such as how sending and receiving areas are defined, which properties qualify, the conditions with which owners receiving certificates under TDRs must comply, rates of compensation, whether the policy is supported by a TDR bank able to buy and sell certificates, and whether the TDR policy is supported through additional local taxes. In determining whether a TDR program might represent a good exemplar, it is therefore important to study the details of how the policy operates since no two schemes are identical. In fact, it would be more accurate to say that the USA has a series of approaches to TDRs rather than having a TDR policy.

TDR programs can be classified according to the objectives they seek to achieve. The programs in some cases have multiple objectives but broadly TDR programs are aimed at achieving at least one of the following:

- The preservation of historical buildings, landmarks, and streetscapes in urban areas;
- The protection of farmland and rural areas from development;
- The protection of environmentally sensitive areas from development; or
- To achieve improvements in urban design and the quality of urban areas.

The case studies illustrate how these can be achieved through TDR programs using some of the most successful examples. It should be recognized that not all TDR programs are successful, and a number have had to be relaunched on a different basis. Many TDR periods have periods of dormancy in which there is relatively little activity for a period of time, which is often a reflection of the buoyancy or otherwise of the local property market.

3.1 The Preservation of Historic Buildings, Landmarks, and Streetscapes in Urban Areas

3.1.1 Washington DC²

² The zoning regulations for Washington DC on which this section draws can be found at: <https://dcoz.dc.gov/zrr/zr16>

Washington's TDR program has a number of objectives. It is designed to create a balanced mixture of land uses to prevent the Downtown from being turned into an office area that functions only during the normal working day. TDRs have been part of the plan to achieve these objectives since the 1984 Downtown Plan. In 1991 the Downtown Development District expanded the TDR program to implement land use goals in other districts and to compensate owners of historic buildings. The main aims of the 1991 plan have been to retain retail, hotel, residential, arts, and entertainments uses in the Downtown area, the preservation of historic buildings, to strengthen Chinatown, to expand residential use, to maintain a concentrated retail district, and to maintain a performing arts and visual arts corridor (Nelson et al, 2012). TDRs are used in conjunction with zoning plans (Washington DC, no date). Downtown buildings are limited in height by the 1910 Height Limit Act, which makes the use of density bonuses difficult to use in the area. There is though the opportunity to utilize them in receiving areas outside of the Downtown area.

The objectives of the plan are to be achieved by guiding and regulating office development. It also aims to protect historic buildings and places but in such a way as to permit compatible new development. In other words, historic buildings are not to become museum pieces incapable of economic use but to remain as functioning entities. It seeks to establish design and use requirements for ground level buildings to encourage retail, housing, particularly affordable housing, and publicly accessible open space in the Downtown area. The emphasis on housing in the current plans is because the aim of preserving historic buildings has largely been met so that this is no longer the primary focus of the TDR program. A feature of the Washington DC TDR program is its adaptability to meet new goals once previous ones have been substantially met. Minimum floor to area (FAR) requirements for particular uses are set for sub-areas. Particular areas in which well-design mixed-uses and streetscapes are encouraged include Chinatown, M Street, S.E., South Capitol Street, and properties now devoted to federal offices in Southwest. Incentives for achieving retail, residential, historic, and open space goals are provided through the use of density credits (ie TDRs) that can be traded within defined receiving areas. Some of these are on the outskirts of the Downtown area (see Figure 3.1.1), though there can also be transfers within the Downtown area providing that height restrictions are met. Density restrictions on the footprints of historic buildings are limited to a FAR of 6.0 or the existing one if higher. There are height restrictions around the Capitol, Pennsylvania Avenue (the vicinity of the White House), Mount Vernon Square, and Massachusetts Avenue (an area of grand houses, many of which have been purchased as embassies). There are building line restrictions on major streets and the diagonal avenues named after states and districts of USA. Washington DC does allow for a combined lot development under which two lots within the same sub-area can be combined to achieve preferred use requirements rather than strictly requiring each separately to do so. This provides developers with flexibility in achieving FAR requirements.

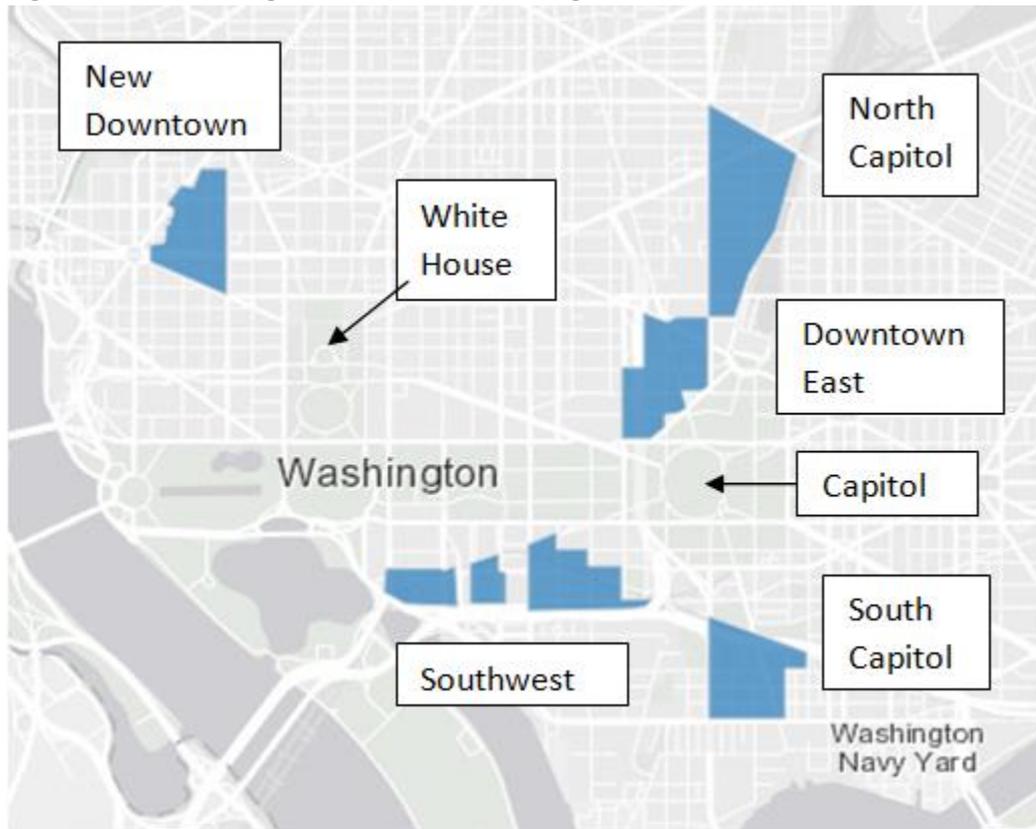
Certain actions can generate credits (TDRs) in designated areas. These include the development of residential gross floor area where none is required or in excess of requirements, the development of arts-related space in the Downtown Arts Sub-Area, the rehabilitation of a “historic resource”, and the development of space within the Downtown Retail Core, Downtown Arts, or Chinatown Sub-Areas devoted to a child development center or Certified Business Enterprise (CBE). One credit is generated for each square foot of eligible residential gross floor area or two for each square foot in a historic building that is converted from a non-residential use. One credit is generated for each arts-related square foot with an additional credit for each square foot converted from a non-residential use or rented by a not-for-profit organization, or with a 14-foot clear height. In each case there are detailed requirements for the covenants that must be entered into by the land owner. In other words, owners must enter into legally binding contracts before they can take advantage of density bonuses.

Credits are also available to preserve historic landmarks and districts by encouraging their retention, restoration, and adaptation for current uses, and to encourage their occupancy by small businesses, the arts, cultural activities, entertainment, retail, and housing, providing these are in keeping with the building. To be classified as historic, a building or structure must be listed in the District of Columbia Inventory of Historic Sites or certified by the State Historic Preservation Officer. Buildings first occupied before 1936 can also benefit from credits. Credits are at a rate of one per square foot of gross undeveloped floor space up to an additional 4.0 FAR. Densities are determined by the matter-of-right densities of the applicable underlying zone districts. The generation of credits must be acknowledged in a covenant and recorded in the land records so that there is a binding reduction in the unused development rights under zoning regulations and the completion of the restoration works. A certificate of occupancy for the credits on the credit-receiving lot is not issued until the restoration work is complete, though up to 25 per cent of the credits can be transferred to generate funds for the work and the covenant can be entered into once 50 per cent of the works have been completed.

Credits can be used to reduce the gross floor areas required in certain Downtown areas for residential or arts uses in the Downtown Arts Sub-area or to construct non-residential gross floor area in excess of that permitted in certain Downtown areas. They can also be used for the termination of a covenant so as to permit the redevelopment of a site in a way that reduces or eliminates the use that generated the credit. A Certificate of Transfer must be issued and recorded in the land records before any transfer can take place. Retransfers are also possible and are subject to the same approval process.

Figure 3.1.1 shows the principal receiving areas for credits. These are areas on the edge of the Downtown away from clusters of historic buildings, Chinatown, theatres and art galleries, and the main retail areas, though credits can also be used in the Downtown area providing that height restrictions are respected.

Figure 3.1.1 Washington DC TDR Receiving Areas (shown in blue)



Source:

http://opendata.dc.gov/datasets/c3aadfc8c6ca4a799870b0985a64df74_10?geometry=-77.124%2C38.859%2C-76.892%2C38.906

Figure 3.1.2 illustrates buildings constructed in the New Downtown receiving area in K Street that have utilized credits. Figure 3.1.3 shows the Warner Theatre and the pressures from redevelopment of neighboring lots. Freedom Plaza, in which it is located, is an area where there is demand for offices and hotel developments, and the Theatre's footprint and location would have made it attractive for redevelopment. The restoration of the Theatre made use of credits transferred to sites on 19th and K Street NW in the New Downtown receiving area. The 54,451-foot theatre earned 108,902 square feet of transferrable footage for the theatre use and 97,905 square feet for historic preservation (Pruetz, 2003). The transfers were arrived at as being the difference between the density of the existing building and that which would have been allowed as a matter of right.

A number of historic buildings have been able to utilize credits for the undeveloped densities on their sites to generate funds for their restoration, including St Patrick's Church, Calvary Baptist Church (169,568 square feet), Calvary Baptist Church (52,915 square feet) and the Masonic Temple (Pruetz, 2003), and these are shown in Figure 3.1.4. Figure 3.1.5 shows the Thurman Arnold Building at 555 9th Street in the Downtown Shopping District, a mixed office and retail building. This included four floors of retail with 107,000 square feet. At a 3:1 bonus ratio, 321,000 square feet was created for transfer of which 75,000 square feet were

actually used in this building and the remainder was available for transfer to other sites (Pruetz, 2003).

Figure 3.1.2 Washington DC New Downtown Receiving Area 19th and K Street



Figure 3.1.3 Warner Theatre and Redevelopment Pressures in Freedom Plaza



The consensus view of Washington DC's TDR program is that it has been successful in achieving its objectives. Between 1990 and 2007 9.5 million square feet of transferrable floor area was generated and 8 million actually transferred (Nelson et al, 2012). Although the use of density bonuses in the Downtown area has been limited by the height restrictions that prevent buildings like the Capitol and White House from being overshadowed, developers have had a choice of receiving areas immediately outside of the Downtown area in which to utilize them. The aims behind the policy have been to maintain a vibrant Downtown area in which there are a variety of uses to encourage people into it throughout the day and night rather than just during the office day, and in which historic buildings are utilized rather than being museum pieces. The combined lot development allows developers flexibility. The issuing of TDRs follows strict procedures to ensure that covenants are put in place and that transfers of credits do not take place until the obligations under these have been fulfilled. Once transfers have taken place, utilizing them is a matter of right providing that zoning rules for the area are respected. The impact on historic buildings has tended to produce the preservation of facades rather than complete buildings and these can be dominated by the larger structures into which they have been absorbed. Economically, the system depends upon continuing demand for offices in the city. In periods of recession demand for TDRs has

slumped. Density bonuses have been used as an alternative to grants for the restoration of historic buildings.

Figure 3.1.4 Landmark buildings which have been able to utilize TDRs to generate funds for restoration include (clockwise): St Patrick’s Cathedral, Masonic Temple, the preservation of the townscape and small businesses in Chinatown, and Calvary Baptist Church



Figure 3.1.5 Thurman Arnold Building at 555 9th Street



3.1.2 New York City³

New York City is generally regarded as being one of the pioneers of TDRs having adopted the ability to transfer floor areas between plots in 1916. Its first TDR ordinance dates from 1968. New York has four main TDR mechanisms: zoning lot mergers (ZLM), landmark transfers under sections 74-79, Special District transfer mechanisms, and transfer provisions in Large-Scale Development Plans. TDRs have been used in New York for the preservation of historic buildings, the retention of historic uses, and for urban design purposes such as to provide public open spaces and infrastructure.

It would be a mistake to say that New York has a TDR policy. What it has is a series of TDR policies, some of which look as though they were introduced as a political response to specific public concerns or as a way of avoiding opposition from a well-organized group of owners. Some of the TDR schemes have never resulted in a single transfer and others still in existence would appear to have exhausted the potential for transfers. TDRs do not function in isolation but form part of the range of planning and zoning policies. New York uses TDRs in some situations in which other cities use alternative policies or controls to achieve the similar ends. It is worthwhile examining New York's policy in detail because its apparent successes and failures and because these are not the product of a single scheme.

3.1.2.1 Zoning lot mergers (ZLM). Zoning lot mergers combine contiguous tax lots within a block eliminating lot lines for zoning purposes. They can be executed as of right without additional approvals as there is just free movement of floor areas within the merged zoning lots that do not change the underlying zoning plan. The lots do not have to be under a single ownership or lease. All that is required is that a Zoning Lot Development Agreement is executed by the various parties and recorded at the Department of Finance. As ZLMs do not allow for exemptions to regulations and do not allow any buildings that could not happen as of right, procedural hurdles are low and restrictions and regulation requirements are limited.

³ Zoning regulations for New York City, on which this section draws, can be found at: www1.nyc.gov/assets/planning/download/pdf/zoning/zoning-text/allarticles.pdf?v=0525. This section draws particularly on NYC Planning (2015).

This makes the procedure one which is used relatively frequently. The system has been in existence since 1916. Since 1961 each lot has been subject to a FAR and the present arrangement largely date from 1977. Since 2001 towers in most zoning districts must cover at least 33 per cent of the merged zoning lot following the construction of the Trump World Trade Tower in 2001, which on 13 per cent of the merged lot.

The workings of ZLMs can be illustrated by 24 West 55th Street. This is an apartment block built in 1936 by the architect Wallace K Harrison, whose other buildings include the Rockefeller Centre, the United Nations complex, and the Metropolitan Opera House. The block is owned by a co-operative in which the owners of the apartments have shares. The block is in need of refurbishment. The common areas have many of the original design features obscured by subsequent changes, although they remain in individual apartments. More significantly, the electrical wiring system does not meet modern standards and the metal window frames, which act as cold bridges, are rusting away, which this has resulted in localized damage to the ceiling areas adjacent to the windows (see Figure 3.2.1). The refurbishment is being financed by the sale of unused development rights to the developer of the adjacent property.

Figure 3.2.1 24 West 55th Street, New York



NYC Planning (2015) quotes research which indicates that 90 per cent of the floor area transfers in New York City between 2003 and 2011 were in the form of ZLMs. The numbers varied between 15 and 70 in any given year and about two-thirds were in the Financial District, Lower East Side/Chinatown, Clinton/Chelsea, and Midtown. Most were for less than

15,000 square feet, the median being 13,000 square feet. The areas in which ZLMs have been most used are in Manhattan where the predominant building mode is high rise and the streets wide. This means that relatively few issues are likely to arise in terms of loss of light and views than where the typical height of developments is much lower and the street layout narrower. In any case, the scale of the transfers in most cases is modest, though some major developments, like Trump World Trade Tower, have taken place by gathering together unused development rights from a number of neighboring lots. There are therefore some issues with the policy although it can be argued to have facilitated the preservation of many smaller scale buildings. The demand for residential property by the world's super-rich in a city that offers them and their money safety and a high quality of life has fueled a boom in condominiums south of Central Park, resulting in extremely tall buildings on small lots, which the policy has made possible. This raises planning issues, particularly the impact on the skyline. NYC Planning (2015) makes the case for greater oversight of the policy and ability to block developments, something that other world cities, which do not have TDR programs, have been inclined to do.

Figure 3.2.2 The growth of extremely tall buildings in New York City resulting from the use of Zoning Lots Mergers



3.1.2.2. Landmark transfers. Landmark transfers under section 74-79 were created in 1968 to preserve historic buildings from destruction. The catalyst appears to have been the demolition of the old Pennsylvania Station in 1964 and Penn Central Transportation Company's request to replace the Grand Central Terminal with a 59-storey office tower in 1969 (see Figures 3.2.2 and 3.2.3). When the development was blocked, Penn Central sued New York for damages on the grounds that the deprivation of development rights amounted to a "taking" and therefore expropriation. The Supreme Court ruled in 1978 in *Penn Central Transportation Co v City of New York* (438 U.S. 104 1978) that the application of New York City's Landmarks Preservation Law to prevent the Penn Central Transportation Company from building a high-rise office building above the station did not constitute a "taking" as the

company could make a reasonable return on its capital from station. The action was therefore a legitimate policing one and a restriction on an individual property right did not render the regulation to protect a landmark building invalid. In any case, the offering of transferable development rights would have provided mitigation if not “just compensation” if a “taking” had occurred (Berger, 2003). Had the city lost the case, it would have rendered the protection of landmark buildings prohibitively expensive since the city would have had to compensate the owners for the loss of development potential.

Figure 3.2.2. Grand Central Station, New York



Figure 3.2.3 Penn Central Station Redevelopment, New York



Section 74-70 enables the owners of landmark buildings to sell unused development rights to adjacent properties. Adjacent properties can be contiguous ones, directly across the street, or that share an interchange. The sending site must be designated by the Landmarks Preservation Committee. The amount that can be transferred is the difference between the building size and that allowed by zoning. The owner must submit a maintenance plan for the landmark building. The receiving plot is limited to 20 per cent above the maximum floor area set by zoning, except in high density commercial districts. The Planning Commission can approve a transfer if the additional development on the receiving site does not create adverse impacts on neighboring properties or else the balance of advantages outweighs the disadvantages (Pruetz, 2003).

NYC Planning (2015) identified 11 landmark transfers that have taken place plus one not actually taken up, including Grand Central, St Thomas' Church, and the University Club, in all totaling 1,994,137 square feet. The limited number of occasions when this measure has been used suggests that it has had limited success. One reason is that many landmark buildings, such as the Chrysler Building, are already built up to the allowable FAR or are even above it and so are ineligible as they have no unused rights to transfer. Most of the buildings which have unused rights are owned by the city, such as schools and museums, and it has not been policy to sell these to private developers. The receiving sites also may be too small to absorb additional rights or there may be no viable receiving sites. All the successful transfers have been in the Midtown or Downtown parts of Manhattan, where there is a demand for high grade commercial and residential properties. NYC Planning (2015) consider that a further limiting factor has been the Special Permit requirements "which entails expensive and uncertain public review" (p.12) and can add \$750,000 to the cost of

development. There were no successful applications under section 70-74 between 1990 and 2007.

The problem with Grand Central is the huge amount of TDRs that it generates by virtue of being a relatively low rise building with a massive footprint. According to NYC Planning (2015), 488,037 square feet were transferred in six transactions between 1979 and 2004 but in 2015 1,224,109 square feet still remained. The other landmark buildings in the area were mainly over-built but, even without these, the impact of the transfer of Grand Central's TDRs to the immediate area would have far-reaching consequences. The city therefore created a Grand Central Sub-district in 1992. As NYC Planning (2015) notes,

“The rationale stated by the C[ity] P[lanning] C[ommission] for altering the TDR provisions for the Subdistrict seem to have less to do with a desire to liberalize the rules so that Penn Central, the owner of Grand Central at the time, could sell their rights, and more to do with concerns about the planning consequences of a massive TDR transfer in the area immediately adjacent to Grand Central” (p.20).

The provisions for the Sub-district permit the transfer of floor area of up to 1.0 FAR of the baseline maximum of the receiving site, subject to certification. Transfers that result in a maximum 21.6 FAR on the receiving site in a core area are by means of Special Permit, which requires an on-going maintenance and improvement plan for transit and pedestrian circulation.

3.1.2.3. Special District transfers. New York has made use of Special District transfers to protect particular areas and uses rather than individual buildings. These do not use a single unified procedure, but ad hoc ones have been developed for each district, with modifications to correct mistakes. They have been used for the development of areas adjacent to the United Nations in 1970, the South Street Seaport in 1972, Grand Central in 1992 (as discussed above), and the Theatre area in 1998. More recently they have been used to secure open spaces and urban design goals for the High Line, Hudson Yards, and the Manhattanville expansion of Columbia University.

The South Street Seaport Sub-district encompasses the historic seaport area adjacent to the Brooklyn Bridge. The city began grading, filling and paving South Street in 1798 but the buildings date mainly from after the disastrous fire of 1835 (Burrows and Wallace, 1999). They are low rise and therefore of low density (see Figure 3.2.4). They are close to Wall Street and the Financial District and attractive for office development. The views across the East River make the sites attractive for residential developments. The granting sites were historic buildings which were in the process of defaulting on their mortgages. If this had happened, foreclosure would have followed, and the buildings demolished to make way for development so enable the creditors to recover their loans. The granting sites were able to convey the TDRs to a TDR bank for subsequent disposal to a receiving lot. The city negotiated a deal whereby the banks accepted TDRs in partial satisfaction of their debts with the TDR bank being created to solve the problem of delay between the relief of the granting sites from their debt obligations and the development of the receiving ones. As well as saving the historic area, TDRs also contributed to the South Street Seaport Museum. The area is a

popular recreational one, aided by its proximity to the Brooklyn Bridge. The effect of TDRs has been to preserve leisure and tourist uses as well as historic buildings. Fieldwork indicated that many of the buildings are currently being used for activities, such as visual and performance arts, that generate an income per square foot of floor area significantly below that which might be expected had the area been redeveloped. These uses are often attracted to areas in which property values and rents are low because of affordability issues. However, the mix of uses that results probably contributes to the attractiveness of the area for tourists and visitors.

The size of the transfers in this sub-district is measured differently than other TDR schemes. The permitted area that could be transferred was the maximum area under baseline zoning less the lesser of the lot area with a 5.0 FAR or the floor area of the existing buildings. In addition, building rights over streets which had been closed could also be transferred. Receiving sites are limited to 10.0 FAR or 21.6 on lots of less than 30,000 square feet. The scheme created 1.4 million square feet of TDRs, of which 340,000 square feet had not been transferred by 2013. Six TDR transactions have taken place according to NYC Planning (2015), two in 1983, one in 1984, one in 2007, and two in 2008. According to NYC Planning (2015), no transactions appear to have taken place since 2008 when prices were \$150 per square foot. The outstanding TDRs were purchased from the TDR bank in 2014 by the Howard Hughes Corporation, which hoped to use them in developments currently outside of the designated receiving sites. TDRs made possible the saving of this area from redevelopment without financial resources being made available from the city's budget. Arguably, the contribution to diverse leisure activities within the city has aided diversification away from dependence on financial services and countered the limited hours offices are open in this part of Manhattan.

Figure 3.2.4 South Street Seaport, New York





The creation of the Theatre Sub-district has been used to protect a particular land use rather than specific buildings. The aim was to protect theatres from Midtown office development or the expansion of hotels around Time Square. Figure 3.2.5 illustrates the pressures theatres are under with their sites being dwarfed by hotel developments, which offer higher potential profits for land owners than theatrical activities. Theatres are an important aspect of New York's tourist industry and generate significant multiplier effects for the local economy, including spending on hotels and restaurants. The loss of theatres would be likely to undermine the tourist industry and the viability of the hotels, whose development threatens the future of theatres.

The present scheme dates from 1998. A previous scheme in 1967 failed to prevent the closure of theatres. A 1982 scheme had permitted listed theatres to sell unused development rights with a Theatre Retention Bonus. According to NYS Planning (2015) only four TDRs took place over the period 1982 to 1998. The 1998 scheme allows listed theatres to transfer TDRs anywhere within the Theatre Sub-district. The procedures were simplified to require only certification up to 20 per cent above FAR on the receiving sites so that developments can take place as of right. The slightly more demanding procedures of authorization is required to transfer up to 44 per cent above permitted FAR on the receiving sites in a corridor along 8th Avenue. The scheme created a Theatre Sub-district Fund to promote theatre use and preservation with an initial contribution of \$10 per square foot TDR (subsequently raised to \$17.60). Theatres have to covenant to operate as a legitimate theatre for at least five years. This significant as there is demand in the area for performance space for "adult" entertainment, such as lap dancing, which is not considered legitimate theatre. There must be proof that the building is physically and operationally sound or a plan to achieve this, a financial plan demonstrating the ability to comply, a maintenance plan, and a contract for the commitment to legitimate theatre for the life of the receiving site development (Pruetz, 2003). Initially the scheme was delayed by a legal challenge, with the first TDRs taking place in 2006. According to NYC Planning (2015) there have been 15 TDR transfers from six theatres involving 473,546 square feet.

The Al Hirschfeld Theatre, shown in Figure 3.2.5, was a pioneer with 4 TDRs totaling almost 74,000 square feet in 2006-07. It illustrates both the successes and weaknesses of the scheme. The theatre opened in 1924, has dressing rooms for 200 actors and a seating capacity of 1,424, making it ideal for musicals. The neighboring theatre is used for “adult” entertainment. Its location at 302 West 45th Street, lying between 9th and 10th Avenues, is well away from the area of Broadway under pressure from hotel and office development, with the adjacent area offering little development potential of any kind. It might be argued that the theatre owners were able to benefit from a scheme when they would have been hard pressed to realize any development potential for their theatre. This is a criticism that has been levelled at other TDR schemes, namely that they reward those for whom redevelopment is unlikely to be realized.

Figure 3.2.5 The Al Hirschfeld Theatre and pressures on Broadway theatres from office and hotel developments



The Broadway theatres are an important contributor to New York’s tourist industry. Although other factors than TDRs have helped the revival of the theatres, including a reduction in the crime rate and easing the ability of foreign productions and actors to come to Broadway, the TDR program has also been an important contributor. As NYC Planning (2015) notes, theatre owners are a more united and powerful group than most owners of landmark buildings. The city has been able to increase commercial density in a sensitive location through linking it to one of saving the theatres. As transfers only require certification or authorization, they are difficult for opponents to challenge.

The Special Hudson Yards Sub-district was created in 2005⁴. A central part of the development is the enclosing of the Eastern and Western Yards of the Metropolitan Transport Authority by a platform supported by a series of caissons. This enables the air rights above the yards to become available, though this has required substantial investment in altering the transport infrastructure in the area, which the sale of air rights could be expected to recoup. The developments are a mixture of high class offices, residential, retail and leisure developments. The position of the track, underground, and utilities means that only 38 per cent of the site can take buildings. There has also been an impact on the surrounding areas, opening them up for development because of their proximity to Hudson Yards.

There are two TDR scheme for the area. One concerns the development rights on MTA's Eastern Rail Yards and the other concerns privately owned sending sites on Hudson Boulevard and Park to receiving sites in the Eastern Yards and Hell's Kitchen areas. The private rights are sold for the market price but those of the MTA are priced using appraisal as a ratio of the receiving site's appraised price per square foot valued in terms of "as of right" development rights. At the time NYC Planning (2015) was produced, the ratio was 65 per cent but this is updated periodically. The private TDRs enable public parkland and open space to be created, with the TDRs compensating owners whose property is to be allocated for such uses. This means that the areas can be acquired without the necessity for compulsory purchase and the payment of compensation. The area is one where District Improvement Bonuses exist and developers can gain additional rights by contributing to a District Improvement Fund by providing affordable housing or public open space. Receiving sites have baseline, intermediate, and maximum FAR. Maximum FARs require TDRs, intermediate FARs can be obtained through TDRs or District Improvement Bonuses. There are no limits on the number of the latter that can be created, though there are on the number of TDRs. NYC Planning (2015) put the value on a TDR using data from recent transactions at \$350 per square foot.

⁴ Documentation on Hudson Yards and its development can be found at: <https://www.hudsonyardsnewyork.com/>

Figure 3.2.6 Hudson Yards (rising above Ninth Avenue)



The Highline is a former elevated railway which has been converted into urban park linking Hudson Yards to West Chelsea and Meat Packing District. It has been created with the aid of TDRs. This involved the designation of the Special West Chelsea District in 2005. When the High Line closed, owners in its vicinity campaigned for its demolition so that they could redevelop their properties. Many of the properties are adjacent to the line and its demolition would have removed a significant constraint to the redevelopment of these. According to NYC Planning (2015), the demolition of the line had been supported by Mayor Giuliani during his period in office but was prevented by a lawsuit. The TDR program was seen as a way of getting the owners to drop their opposition to the Highline park scheme. In the event, the High Line has helped enhance property values in the area by offering an attractive ambiance for residential developments. However, the scheme could only be successful if light was able to enter into the park and not blocked by high rise buildings and those walking along it were able to enjoy the views from its elevated location. These include ones over the Hudson River. This implied rejection of redevelopment proposals from a number of properties along the High Line. TDRs enabled floor areas from these properties to be channeled elsewhere.

According to NYC Planning (2015), prices for TDRs have been in the range of \$200 - \$400 per square foot. Transfers can increase FARs by 1.0 in some areas and 2.5 in others. A layering system exists which is similar to the Hudson Yards one whereby developers can also achieve bonuses by undertaking certain works, such as affordable housing and a monetary contribution towards the restoration and development of the High Line park itself. The area is in high demand resulting in insufficient TDRs to meet developer demands, though there is no limit on bonuses. According to NYC Planning (2015), transfers have amounted to 403,983 square feet in 26 transfers. Transfers are by notification so the burden of obtaining consent is low but planning conditions in the area restrict the developments possible in each sub-location making tight controls over the use of TDRs unnecessary.

Figure 3.2.7 The High Line



The Special Manhattanville Mixed Use District was created in 2007 to enable Columbia University to develop a new academic campus, publicly accessible open spaces, and residential and commercial projects on a 35-acre site between Broadway and the Hudson River. TDRs allow Columbia University to transfer development rights from the public open spaces to other lots, to seek special permits for changes to heights and setbacks for buildings, and to provide design flexibility. Unusually in this case, the sending and receiving sites are owned by the same body, Columbia University. In other jurisdictions, such developments might have been regulated by requiring Columbia University to produce a master plan for the whole development before detailed planning considerations were investigated for each individual building rather than a TDR program. The United Nations District created in 1970 to enable the United Nations Development Corporation carry out development of the area, also allowed the developer to exercise flexibility in site planning and the distribution of floor areas.

Much has been made of the successful TDR schemes in New York, but it should be noted that there have also been some failures. The Sheepstead Bay District was created in 1973 as a preservation mechanism around Lundy's Restaurant. The area was small and of low density making transfer uneconomic, so none took place and Lundy's Restaurant eventually closed in

1977. It reopened in 1997 and closed again in 2007. The Coney Island District was designated in 2009 with the aim of re-establishing Coney Island as a year-round amusement destination. Central to this was to allow the transfer of floor area from the landmarked Child's Restaurant. No transfers have taken place and the scheme appears to have run into difficulties. What these schemes seem to indicate is that the city comes under pressure from interest groups and/ or the public to intervene in situations in which the economic fundamentals would appear to be against the survival of a use or facility. The mechanism chosen is TDRs but these inevitably fail unless there is demand for them. A cynical response might be to suggest that in cases such as these, the city achieved the appearance of doing something without charges against its budget, even though nothing was actually resolved.

3.1.2.4 Large Scale Development Provisions. These date from the 1961 but the present provisions are from 1989. They are confined to residential and low density commercial districts. The aim is to allow owners of unified sites to develop them as a single unit. The plan must be an improvement on underlying zoning and benefit the occupants, the neighborhood, and the city as a whole. They allow for the distribution of floor area and lot coverage without regard to zoning lot lines. NYC Planning (2015) states that there have been approximately 17 projects since 1989 that have transferred areas around a large-scale development site and approximately 30 other large-scale developments that have not.

3.1.2.5 Conclusions. New York does not have a TDR policy but a series of policies that make use of TDRs. Some look like *ad hoc* responses to specific problems and these have generally not been successful. The classification used by NYC Planning (2015) is helpful to understanding them. It argues that the policies fall into two categories. There are those that use TDRs to enable floor area to be moved around a unified site – zoning lot mergers and Large Scale Development Provisions. These do not typically permit anything that could not be done under planning controls. They allow flexibility and a better site plan but not increase unduly the bulk of buildings or affect light. Some of the Special Districts, like the United Nations area or Manhattanville have similar objectives. The second group are those designed as zoning tools – landmark transfers and Special District mechanisms. They are aimed at preserving buildings or specific uses, the creation public open space, or have urban design goals, with unused development rights generating finance to support these without recourse to the city's budget. TDRs are about voluntary agreements and cannot be used as compensation for expropriation or the use of compulsion. However, As NYC Planning (2015) notes, rezoning may be preferable in many cases to creating TDRs which serve to increase the density of development elsewhere.

One of the key success factors behind a TDR policy is demand for development in the receiving areas which developers can realize only by acquiring TDRs. In this respect New York is unique amongst US cities. There is a high level of demand for both commercial and residential property, not just from residents but also from investors from elsewhere in USA and abroad. In international terms only one other city comes close to offering investors the degree of liquidity in property investments that New York does and that is London, where there is no TDR policy. These are markets in which it is normally possible to offload property

investments in most states of the market and they provide a degree of liquidity for investors that is not to be found in other cities. They are also compared with most cities relatively open and transparent markets. For residential property, New York offers a lifestyle that few other international cities can match and a range of luxury properties that are attractive to rich non-residents. The implication is that what may work in New York may not be replicable in other cities because of the unique nature of its property market.

3.2 The protection of farmland and rural areas from development

The growth of cities can put pressure on the surrounding countryside as part of the population seek to live in these areas and commute to work, whilst enjoying the quality of life country areas can offer. However, in the process the character and environment of the countryside can be lost. Moreover, low density development makes the provision of infrastructure costly and public transport uneconomic. Businesses and public bodies cannot provide services for low density populations so commuting to access these is necessary. There are a number of policies that have been attempted in various parts of the world to control urban sprawl. In USA a particular issue has been past zoning schemes that have permitted very low density suburban development around some major cities. TDRs have been seen as a way of controlling this by seeking to persuade land owners to forgo development rights on their land and accept credits that can be sold to developers in receiving areas. The two examples provided here, Montgomery County, Maryland, and King County, Washington State, are widely regarded as being amongst the most successful TDR schemes in terms of the amount of land protected from development.

3.2.1 Montgomery County, Maryland⁵

Montgomery County lies north of Washington DC and includes a number of urban and employment centers such as Bethesda. It is credited with having preserved over 132,000 acres of farmland, 40 per cent of which has been through the use of TDRs (Nelson et. al., 2012). The remainder of the farmland that has been preserved is in federal, state, and county parks. In terms of the area of farmland preserved, Montgomery County is often seen as being one of the most successful TDR schemes in USA. In 1969 it adopted a plan to concentrate development in growth corridors but unfortunately in 1974 adopted a zoning plan that permitted residential development at a maximum of one unit per five acres. The result was that by 1980 12,000 acres of farmland amounting to approximately 18 per cent of the agricultural land had been lost to five-acre lot subdivisions for residential purposes thereby threatening agricultural production as land was turned into low density suburban housing (Pruetz, 2003; Nelson et. al., 2012). The 1980 master plan established an agricultural and woodland reserve and a change in zoning of development to one unit per 25 acres so that family farms could be preserved. The 25-acre size was chosen after research indicated that this was the minimum needed for a farm to survive on a cash crop basis (Pruetz, 2003). The problem was how to persuade land owners to accept the lower density of development. The

⁵ Details of the program and presentations explaining it on which this section has drawn can be found at: <https://www.montgomerycountymd.gov/>

solution was seen to be the adoption of a TDR policy under which owners would voluntarily accept easements restricting development in exchange for credits. By selling the credits, they could access cash to release part of their equity stake in their property whilst still retaining the ownership of the property and continuing to live on it and work it as a farm. In essence, TDRs for many farmers operated as an equity release scheme in which they could turn part of the equity in their land into cash without having to sell the property itself.

The sending area under the TDR program is the agricultural reserve. All areas of the reserve qualify under the program, irrespective of their suitability for development or the quality of the rural environment they represent or their agricultural potential. The implication is that landowners with properties that offer little prospect of development can cash in on the TDR program as well as those with land which offers little agricultural potential. In other words, the program is not selectively targeted as it is in some other schemes through different rates of credit according to the vulnerability of the land and how desirable it is to preserve it. Credits are available at the rate of one unit per 5 acres. Owners in the reserve must retain one TDR per permanent dwelling on the sending site. They can also choose to retain one TDR per 25 acres, which would enable them to develop at some stage in the future. If the density is lowered still further at any stage in the future, these latter rights would be valuable as they would have to be bought out. Participation in the scheme by owners in the reserve is voluntary. Easements are registered but the transfer can only take place once the plan at the receiving site has been approved. This can delay the process by two years. It means that TDRs are typically secured under option contracts until the receiving site has been approved (Pruetz, 2003).

The receiving areas are areas outside the reserve deemed capable of accepting residential development. In principle, they should be able to absorb all the TDRs that could theoretically be created though it is possible that further receiving areas might be needed if all the rights were actually taken up (Pruetz, 2003). Montgomery County has 35 planning areas, each with its own master plan developed in consultation with the local community. Some areas have a baseline that can be achieved without TDRs and a maximum density that can only be reached with the use of TDRs. Some of the areas do not designate any locations where TDRs can be used and the allowable density is often below the maximum permitted (Walls and McConnell, 2007). In effect, some of the areas designated as receiving areas have found ways of blocking increased density of development. This is perhaps unsurprising. Those who have chosen to live in quiet country towns may not wish to see the character of the area changed by increased development or to risk congestion of facilities and infrastructure. There is a rule that two-thirds of the maximum density must come from TDRs but there is evidence that developers are granted exemption from this in a significant number of cases, thereby undermining the market for TDRs (Walls and McConnell, 2007).

The TDR program does not operate in isolation. It was supported by a Development Rights Bank to buy TDRs and resell them at a later date. However, as owners were able to sell their right to developers, the bank has been closed as it was unused. The result has been lack of information centrally about what is happening in the TDR market as individual agents

conduct transactions, making the market less transparent for both developers and land owners (Walls and McConnell, 2007). There are farming support services, such as buy local campaigns, farmers' markets, and advice services to help develop and maintain agriculture. Owners can also obtain tax benefits from donating easements for conservation purposes (Pruetz, 2012).

Although a large amount of land has been preserved, there have been some issues with the scheme. As noted, each community can influence the amount of TDR development allowed in the receiving areas and not all have welcomed additional development in their areas. The result is that some have taken little TDR development (Walls and McConnell, 2007; Nelson et. al., 2012). Developers can choose to avoid TDRs by not exceeding the baseline development or by seeking exemptions from the use of TDRs to achieve higher densities. Much will depend on the relative values of the properties that can be built. More intensive development is not necessarily the most profitable, particularly when the costs of acquiring TDRs is factored in. There is evidence of a dual market developing for TDRs with a price difference of 10 or 20 times between those that have to be used in transfers and those that can be used to develop rural areas at a density of one unit to 25 acres (Walls and McConnell, 2007). The program is a relatively simple one but there is a risk that the owners who take advantage of it are those whose land has the poorest development potential so that TDRs represent a way of obtaining value from the land that they would not otherwise be able to access. Like most TDR schemes, TDRs are based on the area of land and not on the potential development value of the property. Some owners taking advantage of the scheme may have no intention of developing their land, though this may be a way of levering capital into agriculture and enabling them to remain as farmers. The map of lands on which easements have been placed seems to indicate that these are primarily located in the areas more remote from urban growth centers (Pruetz, 2012, p. 122).

TDRs have played an important part in the success of the program, but it should be recognized that more land in the reserve was preserved through federal, state, and county parks. The viability of farms – essential if farmers are not to seek to exit the industry through sales of land to developers – has required agricultural support programs. There is evidence of changing farming patterns in the county over time with a decline in animal husbandry and growth in areas like vegetables, nurseries, greenhouses, and horse and pony husbandry. The losses of farmland have been mainly of pastoral land rather than crop production (Walls and McConnell, 2007). The areas remaining in agricultural growing production are ones which are capable of generating higher incomes per acre. The implication is that the value of such land has risen making development both less attractive as an option and less affordable for developers. There are also the costs from tax allowances from the donations of easements for conservation purposes. Such tax expenditures are not recorded as costs to budgets, though losses of revenue have the same net impact on budgets as expenditure increases. There does not seem to have been an examination of how cost effective the TDR program has been with the suspicion that it might have over-compensated landowners who had limited prospects for developing their land whilst encouraging a higher level of development through the generation TDRs than would otherwise have been the case.

3.2.2. King County, Washington⁶ and Seattle⁷

One of the major problems encountered in Montgomery County was the unwillingness of communities designated as receiving areas to accept TDRs and the higher densities of development that being a receiving area implies. The approach of King County to this problem is of particular interest since some of its receiving areas are clearly not only capable of accepting higher density in development but are also willing to encourage it. How King County has resolved this problem is instructive. The TDR policy adopted by King County is an example of cross-jurisdictional TDRs in which receiving areas may be in a different local authority from the sending area. Rural areas and small towns may offer few development opportunities in which TDRs can be absorbed making the designation of receiving areas problematic and resistance may be encountered from those who see such policies as fundamentally changing the character of the area in which they live to no personal benefit. This can act as a barrier to developing TDR programs aimed at protecting the countryside. King County has resolved this by finding a way in which amongst the receiving areas is one of the USA's most rapidly growing cities on account of its association with high technology industries, Seattle, which lies to the east. Its major employer includes Boeing and Microsoft. This raises questions as to how cross jurisdictional transfers can function to the benefit of both parties and not merely the sending area. King County's TDR program is the largest in the country in terms of farmland saved and on this measure can be counted a success.

In 1990 Washington State adopted a Growth Management Act from which stemmed an Urban Growth Boundary in King County with a Rural Land Area and Resource Zone of forests beyond (Nelson et. al., 2012). The initial TDR program adopted in 1993 applied just to land under the County's jurisdiction so that both sending and receiving sites were within the County (Nelson et. al., 2012). In 1998 the program was changed to include transfers to incorporated cities, initially for a three-year period. Seattle joined the program in 2000. The cities of Issaquah and Bellevue are also participants. The cross jurisdictional element became permanent in 2001. The budget since 1998 has included funding from King County to the participating cities for amenities. Financial support for receiving areas is something lacking in the Montgomery County program. Although in Montgomery County the receiving areas lie within the same jurisdiction as the sending areas, it does not follow that they have an interest in receiving TDRs and their citizens may be opposed to doing so. The sending areas may need to offer financial contributions to offset the impact transfers of development have on the receiving areas. This issue is explored further in Section 5.

The sending areas in King County include low density residential ones as well as agricultural and forest areas. Sites must have agricultural or forestry potential, or a critical wildlife habitat, open space, green belt between urban areas, or regional trail connector (Nelson et. al.,

⁶ The documents on which this section is based can be accessed at:

<https://kingcounty.gov/services/environment/stewardship/sustainable-building/transfer-development-rights/>

⁷ The City of Seattle land Use Code can be accessed at:

https://library.municode.com/wa/seattle/codes/municipal_code?nodeId=TIT23LAUSCO. Policies on TDRs and bonuses appear in Section 23.49.

2012). There are requirements on the easements, such as a forestry stewardship plan or a rural forest one. The receiving areas can determine the type of property from which they will accept TDRs. Seattle has been willing to accept TDRs from distant parts of the county, including counties other than King County, and not just ones on its own boundary so as to create a green belt. It has recognized that it has an interest in preserving the countryside beyond its boundaries because of their impact on issues like water and air quality as well as the recreational facilities these provide. The receiving areas are the Denny Triangle north of the Downtown, which used to be an area of surface parking and underutilized commercial and industrial buildings (Nelson et. al., 2012), the commercial core, and the south shore of Lake Union. There has been criticism that these areas are too restricted and that these should be removed to allow affordable housing to be constructed using TDRs throughout the city (Costich and Stockton, 2017).

The credits vary according to the area over which development rights have been extinguished and whether they are to be used for residential or non-residential property. For example, one credit used for residential development requires the extinguishment of development rights over 1,640 square feet of agricultural land in King County but only 420 square feet for Pierce County (Seattle, n.d.). Seattle and the other urban areas have also benefitted from amenity grants from King County in recognition of their contribution to its TDR program. Amenity funds can be spent on projects such as public art, cultural or community facilities, drainage, roads, public transport, and landscaping. Almost all the TDR transactions from rural and urban separator lands have been to urban areas either within King County or the neighbouring jurisdictions and not to other rural areas (Walls and McConnell, 2007).

There is a TDR Exchange that facilitates purchases and sales and a TDR bank that can purchase development rights but only from rural areas or agricultural or forestry areas in order to prioritise the effective use of limited funds. The TDR bank was established in 1999 and had capital of \$1.5 million from the county and \$0.5 million for amenities in receiving areas. Based on recent transactions, that capital will only enable the bank to hold about 50 units at a time. The bank must buy and sell TDRs at fair value, however, the County has also bought TDRs, including those for 90,000 acres in the Snoqualmie Forest for \$22 million in 2005 (Nelson et. al., 2012). It can sell TDRs only for developments in urban areas in the County or the cross jurisdictional areas. The TDR scheme does not operate in isolation. A dedicated part of the property tax generates more than \$10 million per year for open space preservation and bonds of \$49.2 million in 1964, \$50 million in 1979, \$117 million in 1989, and \$60 million in 1993 were raised to acquire open space or farmland (Pruetz, 2012). The bonds carry interest charges that require servicing. In addition to the County's acquisition and TDR programs, approximately 43 per cent of the County is owned by federal agencies, Washington State, and municipalities (Pruetz, 2012). These acquisition programs mean that TDRs have been focused on protecting the land that owners are unwilling to sell.

The issues that arise with the program are similar to those with Montgomery County. Owners are likely to be most willing to enter into easements on those properties that offer least development potential, thereby acquiring assets that would not be available through normal

market means. The program requires full time administrators so there is an annual cost. As Section 4 makes clear, its success does depend upon the demand for development in the receiving areas and there have been periods when that demand has dried up because of recession in the property industry. This makes for uncertainty about both the value of TDRs and when they can be disposed of. The relatively small capital available to the TDR bank does limit its ability to smooth out demand between periods of recession and boom.

Seattle has its own TDR program since 1985, which has probably helped overcome the inter-jurisdictional issues. This has helped ensure that TDRs from King County are not used in unsuitable areas but can be directed towards those with the capacity to absorb them, including areas in which additional development is desirable. There are sending sites in the historical core, such as Pioneer Square, Pike Place Market, and Chinatown, and these can make use of the difference between the floor area allowed by zoning and the actual floor area of buildings. There is a matrix of regulations for receiving sites. The Downtown Office Core areas are able to take significant amounts of transfers with base FARs of 4.0 or 5.0 and maximums of 10.0 or 14.0 available with housing and amenity bonuses. In other areas there are greater restrictions. For instance, in the Downtown Retail area, transfers can only take place within the same block and zone and in the Downtown Mixed Commercial area transfers can only come from low income housing and historic buildings in specified zones (Nelson et. al., 2012). The aim would appear to be to ensure that key Downtown areas retain their character and are not swamped by new developments or developments that are incompatible with historic uses.

For historic buildings to be designated as a sending area, they must be designated landmarks. The Seattle Landmark Preservation Board must approve the proposed restoration, and the applicant must complete the restoration and have an ongoing maintenance plan. The receiving site does not obtain a certificate for occupancy until the rehabilitation of the sending site is complete. The receiving site must provide security for completion of the work with funds being deposited in an escrow account before building permits on the receiving site are issued. The agreement between the sending and receiving site owners is recorded as an easement on both properties and the sending site must be preserved for the life of the receiving site building (Nelson et. al., 2012). Seattle also provides incentives for certain activities such as childcare facilities, retail stores, rooftop gardens, housing, and public atriums.

The city operates a TDR bank, which has included using these to construct and restore performing arts centers (Nelson et. al., 2012). Seattle's TDR program has many features of good urban conservation programs. However, in the context of Seattle as a receiving center for TDRs from King County and elsewhere in Washington State, the significance of the program is that TDRs received from outside its jurisdiction do not have adverse consequences for the city. There has been criticism that unregulated transfers of FARs through devices like combined lot agreements allow developers to avoid using TDRs and reduce the potential of neighboring site to take additional development (Costich and Stockton, 2017).

Figure 3.3.1 Seattle: Waterfront and South Lake Union



Figure 3.3.2 Historic Markets district and Pioneer Square area



King County is often put forward as one of the most successful TDR programs in USA and certainly can be considered a success in terms of the amount of rural land protected from development. The County would have been potentially under threat through the suburban expansion of Seattle and other urban areas, particularly as this is an area of growing industry. Aside from environmental protection issues, the area is also important in terms of water and air quality for the urban areas as well as providing recreational and leisure facilities. A particularly successful feature of the program has been how TDRs can be used in the neighboring urban jurisdictions. This has resolved the problem of how to find receiving areas for which there is demand for development as well as ones which are willing to accept development intensity. King County has been willing to contribute financially to the development of amenities in the urban areas so the transfer process has not been cost free. As is discussed in Section 4, the prices of TDRs have varied and the willingness of developers to acquire them has varied with the state of the property market, there being periods in which there has been no demand for them. King County has been willing to fund a TDR bank to help to smooth transaction processes and meet the costs of administering the scheme. The TDR scheme does not operate in isolation. Significant parts of the County are owned by federal, state, and municipal bodies. King County has been willing to issue bonds to enable it to acquire farmland and countryside areas. This implies that there will be a cost to be met out of local taxation since bonds have to be serviced. Part of the local tax revenues have been put towards open space preservation. The impression often given is that TDR schemes have no

impact on budgets. One of the lessons from King County is that successful TDR programs may come with a significant impact on budgets through administrative costs, TDR banks, financing amenities in receiving areas, and on land acquisition programs to be run in conjunction with them. Another is that TDR programs work effectively as part of a broader strategy, in this case at both state and county level. In essence, their role in this case has been to extinguish development rights on land that is not available for sale whilst the land that is available for sale has been bought by public bodies.

3.2.3. Pinelands, New Jersey⁸

The New Jersey Pinelands were designated as the first national reserve in 1978 and in 1979 the State of New Jersey established the Pinelands Commission covering seven counties and 53 local authorities. During the 1970s the area came under pressure from the growth of Atlantic City (Pruetz, 2003). The area is one of pine and oak forests, swamps, bogs, and marshes and is home to a wide variety of plants, birds, mammals, reptiles, and amphibians. It contains a large aquifer. The area provides recreational opportunities for residents of a densely populated areas that includes New York City and Philadelphia (Pruetz, 2003, Nelson et. al., 2012).

The TDR program forms part of the Comprehensive Management Plan. The powers of the local authorities within the area to conduct their own town planning policies has been restricted to enable development across the entire Pineland area to be managed. Land has been designated for growth in 23 municipalities, which have coordinated zoning codes so that the bonus density is granted as of right and not through an approval process. Therefore, the issue of local communities effectively barring the use of TDRs, as happened in Montgomery County, should not arise. Also, discretionary extra densities in response to developer applications have been ended so that developers are obliged to buy Pineland Development Credits (PDCs). PDCs must be used where a municipality approves a zoning variance that increases residential density or permits residential development in an area zoned for non-residential uses. There has been investment in infrastructure in the receiving areas, such as sewer improvements, to facilitate greater development density. The policies have been supported by a public outreach campaign (Pruetz, 2003, Nelson et. al., 2012).

Land owners in sending sites can obtain Pineland Development Credits (PDC) on the basis of four development rights per credit. The number of credits is determined by the development potential and environmental sensitivity of the sending site: 1 PDC for 39 acres of upland; 0.2 PDC for 39 acres of wetlands; and 2 PDCs for 39 acres of land allocated to mining but not yet disturbed (Pruetz, 2003, Nelson et. al., 2012). This is a significant difference from Montgomery County as in the Pinelands, credits vary according to the vulnerability of the land to development. The cost of developing wetlands provides them with a degree of protection that sites allocated for mining do not possess. The management of the Pinelands

⁸ The documents on which this section draws can be found on the website of the New Jersey Pinelands Commission at: www.state.nj.us/pinelands/

program has been criticized for its complexity compared with the simplicity of the Montgomery County one (Machemer, P.L. and Kaplowitz, M.D., 2002). The counter argument is that the Pinelands scheme offers a better targeted approach that is more cost effective by not providing excess TDRs for land that is unlikely to be developed or creating extra development through the generation of TDRs.

New Jersey established the New Jersey Pinelands Development Credit Bank in 1987 with capital of \$5 million to act as buyer of last resort for PDCs. It is not permitted to pay more than 80 per cent of the market price for PDCs and can sell only if to do so would not impair private sales. However, what the Bank can do is to guarantee loans secured by PDCs as collateral, helps link buyers and sellers, and maintain a register of all PDC transactions (Pruetz, 2003, Nelson et. al., 2012).

It is interesting to compare New Jersey Pinelands with the Adirondacks in the neighboring state of New York, which is the largest protected natural area in the lower 48 states of USA (ie excluding Alaska). Unlike Pinelands, it is not a federal reserve but a state park. The New York Forest Preserve was established in 1885 and about 52 per cent of the land is in private ownership, the remainder belonging to the State of New York (Adirondacks Park Agency, n.d). The Adirondack Park Agency⁹ was created in 1971 as an agency of the State of New York to develop long term public and private land use plans for the area within the park boundary. The master plan became law in 1972 and the Adirondack Park Land Use and Development Plan was adopted in 1973. Both are periodically revised and updated. The Agency does not manage state lands, which are under the control of different agency. Land in the Park is classified into six types and this determines the development that is permitted and to enable growth to be channeled where it can best be accommodated. Hamlets are areas in which intensive use is permitted with few restrictions. Designated industrial zones have existing or expected future industrial uses. The area is one with timber and timber processing and mining industries and their exploitation is an important aspect of the Park's heritage. The protection of timber from industrial pollution and the flora and fauna that depend on it is a major aspect of the Park's objectives. Within resource management areas, most uses require a permit and special care is taken to preserve the open space. Local governments within the Park can develop their own land use programs for approval by the Agency over which they can then exercise some delegated authority. Critical Environmental Areas are subject to particular controls and include wetlands, lands at high elevation, lands around rivers, and state lands. There are shoreline restrictions on lakes, ponds, and rivers which cover shore setbacks, lot widths, tree cutting, and the erection of docks and boathouses.

The key difference between the management of the Adirondacks Park and the Pinelands is that there is no assumption that owners should be compensated for being unable to undertake development. Rather development is permitted in certain restricted areas and under

⁹ The documents on which this section is based can be accessed at: <https://www.apa.ny.gov/>

conditions but in others permits are required. The area is treated as a public resource even where land is in private ownership. Therefore, private owners are not permitted to undertake activities that diminish the public resource except by consent. The essence of a TDR program is that private owners have the right to develop their properties and destroy features that others value and should be compensated for refraining from doing so.

3.3 Cupertino, California: The achievement of improvements in traffic management

Cupertino is a community of about 55,000 people near San Jose. It is in Silicon Valley and property is in demand from technological companies. It is the location of Apple's corporate headquarters. Unlike the other urban TDRs discussed above, its TDR program is not concerned with conserving historic buildings or historic uses of areas, or with the provision of infrastructure or public open spaces but is concerned with traffic congestion. In 1972 it decided that vehicle trips on its two main streets would have to be limited to avoid congestion (Nelson et. al., 2012). Clearly other policies are available to meet this goal, including controls over off-street parking, support for public transport, and in London and Singapore, congestion charges in certain areas are accessed by private vehicles. Since the 1960s it has been recognized that accommodating demand for motor vehicles in urban areas would require such major rebuilding of them and destruction of streetscapes that this is not feasible, cost effective, or would enjoy public support.

Cupertino placed a limit of 16 one-way peak-hour trips per acre of commercial land (Nelson et. al., 2012). Not all land users generate this level of traffic, whilst for others, the level set was too low. The Traffic Intensity Performance Standard program allows developers to buy and sell trips providing that the average level of trip generation stays below 16 one-way peak-hour trips per acre. The program manual contains trip generation rates for different land uses. For instance, residential uses have a rate of 0.75 one-way peak-hour trips per dwelling. Rates can be reduced or waived for desired uses such as affordable housing. Sales of the trips require a use permit (Nelson et. al., 2012).

Imposing a limit on trip generation would have provided developers and end users with no incentive to reduce the number of trips. However, as unused trips can be monetized and have a commercial value, there is incentive to do so. This type of program is likely to be effective only if there is demand for space otherwise there would be no market for trip generation. The municipality must be one for which employment generation does not outweigh the control of congestion. In many US industrial legacy cities, retaining and attracting employers is likely to be more of a priority than concerns over traffic congestion. As already noted, there are alternative ways of seeking to control traffic congestion that do not require direct intervention in the property market, though these can also become capitalized into property prices. By contrast in Seattle employers in the city with 100 or more employees are required to undertake at least two offsetting measures such as subsidies for transit fares, flexible hours of working, providing preferential parking for high occupancy vehicles, lay on shuttles to park and ride carparks, and permitting telecommuting (City of Seattle Land Use Code, paragraph 25.02.0400). The difference is between allowing firms who reduce congestion to gain

financially and requiring firms to tackle the externality they create. In other words, making the polluter pay rather than bribing the polluter not to pollute.

3.4 Other International Examples

There are relatively few examples of TDR policies outside of USA but examples can be found in Brazil and India.

3.4.1 Brazil TDRs and CEPACs/ OOSCs

Brazil has made use of TDRs but has also made use of a value capture instrument known as the Certificate of Additional Construction Potential (CEPAC) or *Outorga Onerosa do Direito de Construir (OOSC)*. These certificates are auctioned so that developers can purchase them. Like TDRs, OOSCs can be used to permit developments that are in excess of set Floor Area Ratios (FARs) for an area. They can be traded and offered to those contractors who are willing to accept them as payment. Central to the workings of both TDRs and OOSCs is that FARs are set at a level which is below the maximum an area could support on town planning grounds. The permitted development available to developers is likely to be below that which would make development viable. They must therefore acquire either TDRs or OOSCs to enable viable development to take place. This means either purchasing TDRs from those who have been allocated them or bidding successfully for OOSCs. Since TDRs are generally made available to landowners to partially fund public infrastructure and the OOSCs are financial contributions to infrastructure, developers are, in effect, obliged to contribute to the financing of infrastructure and other items of public benefit. This is done by either buying TDRs from the landowners who have been granted them or bidding for OOSCs at auction. They must either fund the compensation the public body has to pay to landowners by buying TDRs from the recipients or else buy permits directly from municipalities by bidding for OOSCs. Developers can recoup the cost of this through being able to develop at a higher density than would otherwise be permitted. OOSC is based on the notion that the landowner's property right is limited to a basic FAR coefficient that is different from the maximum the area could support (Smolka, 2013). In other words, neither TDRs nor OOSCs can be effective unless there is pent-up demand for development in the receiving areas.

Amongst the examples of the use of TDRs has been by the municipality of Porto Alegre to acquire land for a new artery. Some 13.2 hectares was acquired along a 12.3 kilometer extension. This included a 40-metre wide avenue which included a bus lane. TDRs allowed 65 per cent of the land to be acquired and saved 50 per cent of the cost. In Curitiba TDRs were used to help finance a soccer stadium from the 2014 World Cup. A loan from the Brazilian National Development Bank to Atletico Paranaense Club was underpinned by building rights to be used as collateral (Smolka, 2013). They have also been used in Curitiba to develop a flood prevention program. Instead of building concrete flood protection canals, TDRs have been used to create parks which can act as overflow areas and storage lakes. The parks also serve recreational functions and help to preserve trees and forested areas. These areas have become sending areas under TDRs (Dharmavaram, 2013).

OOSCs were established by an act of 2001 that requires all municipalities to levy a charge on building rights above a baseline. The justification for OOSCs is that greater density requires additional infrastructure to which landowners ought to contribute as they are beneficiaries from this investment. It could also be argued that it is the community that has created the increase in value and, therefore, should be entitled to extract part of that increase in the form of charges. Curitiba has been selling building rights since 1991, with different FARs for the various parts of the city.

In principle, the combination of TDRs and OOSCs (or a similar land value capture instrument) has a number of attractions. As noted above, both require there to be demand for development in the receiving area, which is achieved by setting a lower FAR than would otherwise be approved for development, thereby restricting the ability of owners to carry out permitted development without acquiring one of the instruments. In practice, problems have been encountered. There are jurisdictions that are unable or unwilling to impose OOSCs, even though they are created under national law. Other problems include the absence of a master plan or zoning, how building rights are to be assessed, forms of payment, and rules as to how the funds can be applied (Smolka, 2013). There is also no direct relationship between a greater FAR and the value of a development. It is not clear that there is the valuation capacity to identify the precise relationship. Fiscal values, which may not be related to market value, may be taken as a proxy for value. It is likely that the percentage of value taken by OOSCs varies between developments as a consequence. The amounts raised by municipalities through OOSCs appear to vary in ways that may not reflect the underlying values. There has also been the suggestion that OOSC auctions are open to manipulation. If the intention is to use increases in land values resulting from consent to develop to generate funds for infrastructure investment, there are alternative ways of doing this, including betterment taxes and property taxes. These could also raise the revenue to pay cash compensation to those whose land is taken rather than providing them with transferrable development rights whose value can vary. Taxes are likely to be fairer by requiring equal contributions from those who are equal, be more transparent, offer less scope for discretion, and generate sustainable revenues over time rather than being one-off payments.

3.4.2 Mumbai, India

TDRs have been used in Mumbai since 1961 to fund infrastructure development, slum redevelopment, and heritage preservation (Dharmavaram, 2013). Mumbai Central Business District is the primary sending area with suburbs as the receiving areas. One of the key aims of the policy was to create alternative housing for slum dwellers with sum areas being sending areas in ways that involved the participation of residents of those areas. Suburbs can also be sending and receiving areas between wards. Floor Space Index is offered as an incentive to meet construction and land costs, infrastructure, debt servicing, and developer profit. The amount varies inversely with land value, thereby encouraging development in lower density areas.

In 1991 the TDR was modified so that there were no longer incentives to develop in the Coastal Regulation Zone, which offered cheaper but insecure housing to slum dwellers.

TDRs in this case had not protected environmentally vulnerable areas but actually made them more attractive for development (Dharmavaram, 2013). It also exposed those rehoused from slum areas to risks from natural disasters. “Unfortunately, environmentalists consider Slum TDR in the C[oastal] R[egulation] Z[one] as environmentally irresponsible while proponents of slum redevelopment consider it socially irresponsible” (Dharmavaram, 2013, p.10). Although the TDR program has the merits of creating housing for slum dwellers and legitimized the residency of those rehoused, the lack of care in the selection of the receiving areas means that this is not a scheme that can be commended. The uncontrolled issuing of TDRs created gluts and reduced benefits to level where developments were not viable. The institutional context also presents problems, such as rent controls discouraging development and the poor level of mapping making it difficult to check on infrastructure capacity and the suitability of receiving areas. Legal uncertainties and changes in development rules have also contributed the volatility of changes in TDR values.

4 Legal Issues

Implicit in TDR policy in USA are two key concepts: a theory of property ownership and that restrictions placed on the exercise of property rights is a form of expropriation that should be compensated. The USA inherited English common law principles of land ownership. Under this, there is no concept of absolute ownership, unlike in Roman law, but rather that owners own various rights over the land. These rights apply to a space between the center of the earth and the sky and not just to the land or water surface. The rights can be divided so that different owners can possess different bundles of rights as the rights associated with various parcels are not necessarily identical. There can be multiple owners of rights that relate to a given surface area, including sub-surface rights, rights of usage, and conditional rights that may be exercisable under certain circumstances. At their greatest extent, property rights include the right to exclude access to the property, the right to benefit from its exploitation, and the right to sell or otherwise alienate the property. Owners can grant others access rights, for instance by leasing the property in exchange for receiving rents and other charges. They can farm the land, mine any minerals beneath its surface, hunt creatures that walk or fly over it or swim beneath its waters, harvest or exploit natural resources, build on it, or carry out commercial activities from it.

The owners of individual parcels may not own all of these rights. Past owners may have sold partial rights or granted them to others, or even reserved them to themselves when the property is sold. Thus, for example, I may sell you a property I own which has access to a river whilst retaining the fishing rights in my personal possession. Surface rights can be sold separately from subterranean rights to minerals. This is why the ownership is often described as a bundle of rights. For instance, in the UK, it is usual for the Church of England to sell land with a covenant preventing future sales of alcohol from it, and this is binding on all subsequent owners, who will find that they cannot build bars or public houses on the land and, if a restaurant is constructed, it will be unable to sell alcoholic beverages with the meals. Landowners, when selling sites for development, have been known to place restrictions on the use of the land they have sold in order to prevent development undermining the value of their remaining land, such as stipulating that the houses built on it must be of a minimum

value. Sometimes a covenant prevents any development of the land so it must continue in its current use indefinitely. It is possible to buy the right to remove a restriction from the person who owns that right. For example, a restrictive covenant preventing building on a piece of land could be removed by paying the owner of the right to enforce the covenant to remove it. It is quite normal for properties to be subject to easements, for instance the right of a neighbor to have access across the land, or obligations, such as the requirement to contribute to the costs of maintaining a shared facility. The ability to trade rights and impose restrictive covenants means that the precise bundle of rights of any given parcel may be very different from those of its neighbors. The rights associated with the land influence its market value and many covenants and easements can result in a much lower market value than for a comparable property on which there are no such restrictions.

The existence of a property market in which properties are traded with some rights not being available to purchasers creates a permissive environment for TDR programs. Special legislation is not required for the imposition of easements and covenants. Amongst buyers, it is normal to buy properties with restrictions and to undertake due diligence to establish whether there are restrictions and what such restrictions might be. A country with a legal code system may need to introduce legislation to permit the imposition of the covenants and easements required by a TDR program. It may also encounter resistance to restrictions on absolute ownership that the existence of such easements and covenants implies.

Rights over land are constrained by one's neighbors' rights to the quiet enjoyment of their property. This means that owners can take action to stop their neighbors from creating nuisances. There is no right to carry out activities on one's property that result in nuisance to one's neighbors, such as the discharge of noxious substances, undermining structures they have built on their property, or depriving them of light. Modern systems of town planning and building control have developed to provide an institutionalized means of controlling the generation of nuisances and do so by establishing rules as to what is permitted and procedures for enabling breaches to be sanctioned by a community. They provide certainty for those seeking to develop their property and also for their neighbors. Different systems adopt alternative approaches to the balance between obliging those undertaking development to compensate their neighbors for any nuisance caused or being under an obligation to provide mitigation and the neighbors compensating a potential developer for not carrying out a development that might have adverse consequences for them. They may also differ in terms of how neighbor is defined, as to whether this is someone with a contiguous parcel or someone, say, who also uses the street or a passive user who one day might enjoy something like a historic building or open countryside. TDR policies tend towards compensating potential developers for not destroying something that others might value. A stronger town planning system, such as that in the UK, tends towards requiring developers to justify why they should be permitted to damage something others value and to provide mitigation. In the case studies, we can see this happening in the same state. The approach in the New York City is to offer compensation to potential developers through TDRs to refrain from actions such as destroying historic buildings whereas in the Adirondacks the owner of an existing boathouse and dock on a lake might not be permitted to rebuild it when it falls into disrepair.

A key aspect of the TDRs used in the USA is that the ownership of the land does not change, just the quantum of rights associated with the parcel. An owner voluntarily gives up part of the bundle of rights in exchange for transferable development rights. The rights given up could be the right to develop farmland for housing or the right to demolish and redevelop at greater density the site of an historic building. The owner might also accept obligations in exchange for TDRs, such as the obligation to maintain a historic building or for its current use to continue. The owner retains other rights over the parcel and does not have to relocate, cease living in the property or running a business from it or give up his or her ownership of the parcel. Participation in TDR schemes is voluntary. An owner of his own free will and without compulsion accepts a covenant, easement, or obligation over the property in exchange for transferable development rights. As this is a voluntary transaction, one can presume that each party enters into it in the belief that it is in his or her best interests.

The second key principle is that private property rights are protected. If anyone is deprived of his or her rights in the public interest, then they should receive fair and timely compensation for their loss. In the USA compulsory purchase is known as eminent domain reflecting that land was originally acquired through a grant from the state. The Fifth Amendment to the US Constitution states that no person shall be deprived of property without due process of law “nor private property taken for public use without just compensation”. Compensation can be in cash or kind so that the loss of land could be compensated by offering alternative land of equivalent value. The implication is that all the rights, including development rights, are transferred from the property acquired to the other property given in compensation. Fair compensation includes compensation for the land taken, compensation for injury by the expropriation to any land owned but not taken, and compensation for disturbance, such as the costs of relocation. Compensation for the land taken should be based on its market value so that an exact equivalent property can be purchased as a replacement. This implies that there should be compensation for any development rights that exist in the property taken or might reasonably be expected to be granted in the future, irrespective of whether they have been acted upon or not.

The expropriation of individual rights could result in claims for compensation even if no land is taken. Sometimes mitigation is used to minimize such losses. For instance, if a farm is divided in two by a newly-constructed motorway, costs of working the land will increase as what were previously contiguous parcels are now separated by a barrier. The additional costs will become capitalized into the value of the land, which as a consequence will be reduced. In this case, the construction of a bridge between the two parts of the farm at the expense of the highways authority could mitigate the loss. The loss of quiet enjoyment resulting from the construction of a motorway close to houses can be mitigated by noise barriers and sound insulation works on the properties. The key question is how great does the quantum of loss of rights have to be before compensation is required where no land is actually taken? A restriction imposed on what had previously been the right to create a nuisance would not normally give rise to a claim for compensation. For instance, in parts of the UK the nature of the farming that can be undertaken in certain areas is restricted by nitrate regulations

designed to maintain the quality of drinking water. These restrict the number and types of animals that may be grazed on the land. In this case it could be argued that land owners have no intrinsic right to pollute water which flows on to neighbors' land and so the regulation is designed to restrict the generation of a nuisance, but it does have an impact on the profitability of farming and the value of the land.

The answer to whether compensation is payable depends on how much damage is done to the bundle of property rights through expropriating individual ones. There is a general principle that if the loss of rights means that the property is no longer capable of beneficial exploitation, then the loss of individual rights amounts to expropriation of the entire property, even if no land has actually been taken. There should be compensation in the form of payments in cash or kind. But what if there is the loss of certain rights that cause diminution in the value of the property but still allow beneficial exploitation? Here it would appear countries vary significantly in their approach according to how permitted rights are defined.

In the UK development rights were nationalized in 1947. Compensation was paid at the time but it means that no subsequent owner has the right to undertake significant development without seeking planning consent from the local planning authority (the municipality). The implication is, for example, that the designation of a green belt covering farmland around an urban area so that permitted development is restricted, the protection of the view of St Paul's Cathedral along corridors from different locations in London limiting high rise developments, the listing of a building as being of cultural or historical importance limiting the alterations that can be made to it, the designation of a site as being of special scientific interest, or the designation of a conservation area or a national park restricting the development that can take place in it would not normally result in a successful claim for compensation unless it could be proved that the property had thereby been rendered incapable of beneficial occupancy as a result. No compensation is payable just because the owner is prevented from maximizing the value of the property. The public benefit and the need to mitigate the creation of nuisances for other properties outweigh any losses to individual owners. There is a sense in which the countryside and historic townscapes and buildings are part of the communal heritage rather than something that an individual owner can destroy to enhance personal profit. Owners are not regarded as having the right to destroy who is seen as being a common heritage, only as being its custodians for the time being.

By contrast in USA zoning policy is more permissive. For instance, it might be permitted to build housing on farmland providing that the density is no greater than one house per five acres (as in Montgomery County). The greater rights of land owners to carry out development in USA have encouraged the use of tools to persuade owners not to exercise these rights if the results could be argued to be detrimental to the environment or heritage. Thus, rezoning farmland so that the density of development that can be carried out is reduced from one house per five acres to one for 25 acres cannot be undertaken without offering compensation. The sense that property is a public good is less strong than in the UK.

There has been legal debate in USA as to what degree of loss of rights amounts to the taking of them by a public body and, therefore, should be compensated as expropriation. The Supreme Court ruled in *Penn Central Transportation Co v City of New York* (438 U.S. 104 1978) that the application of New York City’s Landmarks Preservation Law to prevent the Penn Central Transportation Company from building a high-rise office building above the station did not constitute a “taking” as the company could make a reasonable return on its capital from station. Therefore, restrictions on an individual property right, such as an air right, did not render the regulation to protect a landmark building invalid. In any case, the offering of transferrable development rights would have provided mitigation if not “just compensation” if a “taking” had occurred (Berger, 2003). In *Lucas v South Carolina Coastal Council* (505 U.S. 1003 1992) the Supreme Court ruled that a land use regulation which deprived owners of *all* economically beneficial use of their land could constitute the taking of property without just compensation, even whereas the policy itself could be regarded as being of merit (Berger, 2003).

The problem with viewing TDRs as just compensation for the loss of property rights is that their value is uncertain, and they do not provide for timely compensation as they have to be sold in order to realize their value. The value of TDRs is unknown until sale actually takes place and could therefore be very different from the value of the rights taken. In order to realize their monetary value, TDRs have to be sold to developers in the receiving area. Their value therefore depends upon the price that developers are willing to pay to acquire them at the time they are offered for sale, assuming that there is any demand for the rights in the first place. Figure 4.1 shows how the market for TDRs in King County, Washington, probably the most successful rural protection TDR scheme in USA, collapsed after the financial crisis of 2007-08 and did not recover until 2015. Those receiving TDRs during this period had no effective means of realizing the value of the compensation they received for accepting easements restricting the undertaking of development on their land.

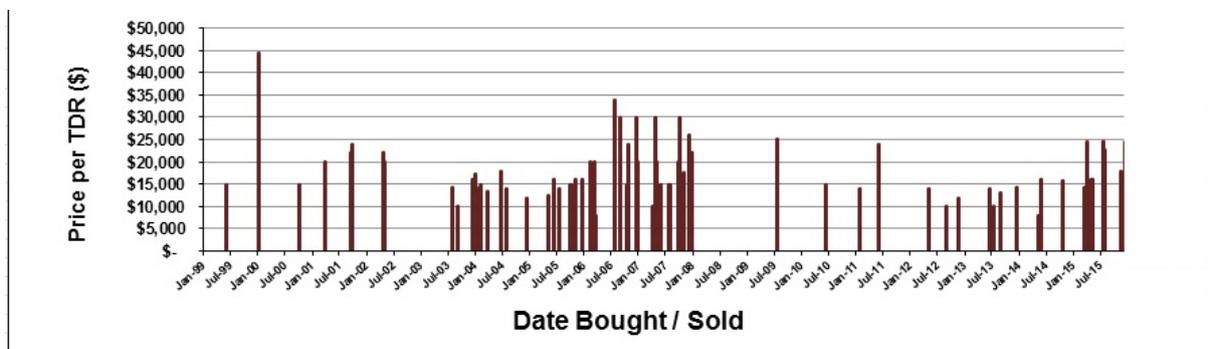
Figure 4.1 Numbers of TDRs Bought and Sold in King County, Washington



Source: <https://www.kingcounty.gov/>

Figure 4.2 shows how average prices for TDRs have varied over time so that those acquiring them are faced with uncertainty as to the value of the compensation they can expect to receive. Even if the full value of compensation can be realized, there may be a considerable delay before TDRs can be sold at a price that achieves this. Uncertainty about the value of compensation and when it can be realized may be acceptable if the transaction is a voluntary one as no land owner is obliged to enter into a TDR unless he considers it to be in his best interests. Moreover, since the TDR does not stop the owner from living on his property or working his farm or running his business, the owner may well find it acceptable to bank the TDR until the circumstances for sale are favorable. These conditions would be unacceptable were TDRs to be compensation for expropriation since they could prevent those whose land was taken from being able to acquire replacement properties and, even if this was not the case, could result in undue delay before compensation was received.

Figure 4.2 Standardized average prices per TDR, King County, Washington



Source: <https://www.kingcounty.gov/>

TDRs depend on public bodies creating an artificial market for development rights in which developers seeking to undertake developments in the receiving area are forced to buy transferrable development rights. TDR schemes are predicated on there being a demand for development in the receiving area otherwise, if there is no market, the rights have no value. Public bodies try to maintain such demand by making it difficult for developers to undertake financially viable developments in the receiving areas without buying TDRs. This can be done by setting floor to area ratios (FARs) at an artificially low level and below that which may be desirable on town planning grounds. The uncertain nature of the value means that the acquiring authority cannot demonstrate that the compensation offered is equal in value to what has been taken. In this sense, there has not been compensation in kind through the offering of land of equivalent money's worth since the value of the compensation is not fixed and depends upon the recipient's ability and opportunity to realize it. This would appear to be the implication of the Supreme Court ruling in *Suitum v Tahoe Regional Planning Agency* (520 U.S. 725 1997; Radford, 1999¹⁰), a case in which land was rendered incapable of beneficial use by regulations restricting development and transferrable development rights were offered as compensation. Similar considerations are likely to apply where a country has

¹⁰ Mr. Radford represented the petitioner Bernadine Suitum before the United States Supreme Court in *Suitum v. Tahoe Regional Planning Agency*.

signed up to a regional human rights convention, such as the European Convention on Human Rights (Council of Europe, 1952), Article 1 of Protocol 1 of which guarantees the right to property. Case law before the European Court of Human Rights has determined that losses resulting from compulsory acquisition should be fairly and promptly compensated (Allen 2005). Where TDRs involve voluntary agreements, no such considerations apply since there has been no compulsory taking of the land. Rights have been surrendered voluntarily. However, it could be argued that this is likely to happen in situations in which the owner has no intention of developing but is happy to be compensated from refraining from something he or she was not going to do. The easements or covenants entered into will be binding on the owner's heirs and successors in title, and, in principle, will reduce the future value of the property. But in the meantime, the current owner has been able to access part of the equity tied up in the property that had previously not been realizable.

A further factor to consider is that USA is a country governed by the rule of law. There is an expectation that laws will be obeyed and enforced and that the judicial system and the policing of regulations is largely free from corruption. A TDR system can only flourish if zoning controls and covenants and easements can be enforced. It is difficult to envisage how a TDR system can function if developers can flout density regulations with impunity or covenants and easements cannot be enforced with those who breach them being subject to sanctions. Or indeed if a country's land information systems or mapping systems are so poorly developed that it is not possible to know whether covenants have been breached or not. TDRs are rule-based systems. There is no point in developers buying TDRs if they can achieve the same densities by flouting planning regulations. Easements and covenants have no value unless backed up by serious and enforceable sanctions. A country with an illegal building problem or one in which illegal intensification of development through the adding of additional storeys to buildings is possible without sanction is not in a position to introduce a TDR scheme.

5 Economic Issues

Fundamental to the success of a TDR program is that there has to be demand for the credits generated. Without this, the program is doomed to failure. Unless developers demand TDRs they have no financial value. Those in receipt of them have a worthless certificate that no-one wants. This means that receiving areas must be ones in which there is buoyant demand for development because occupiers and tenants seek premises in them. The implication is that there is no point in creating a TDR program in which credits are generated that permit greater intensity of development in receiving areas if those areas are not ones in which there is an excess demand by businesses for premises and/or an excess demand by households for residential space. In places where there is buoyant demand from businesses and households, credits from TDR programs can find a market but even these areas are subject to market fluctuations as was noted in Section 4. These mean that the prices paid for credits vary according to demand and supply conditions. Receiving areas can periodically experience excess supply. Recessions in the property market, as after the financial crisis of 2008, mean that developers are unwilling to bid for credits and a TDR program can dry up.

Public bodies seeking to implement TDR programs seek to manipulate demand in order to try to ensure that there is a ready market for the credits generated. This is generally done by setting FAR levels in the receiving area at such a low level that viable development is only possible if the developer obtains TDRs. This approach is not always successful. Developers may decide not to undertake development in areas where there is a TDR policy but instead undertake developments in neighboring areas. This can be feasible in a country like USA where neighboring states or counties have adopted different policies.

Developers may be able to find ways around the restrictions, such as seeking exemptions or obtaining bonus FARs by other means. TDR policies are rarely in isolation and governments usually have multiple objectives, such as the provision of social housing, retention of retail activities in commercial cores, or the provision of public open space that also provide developers with credits. For the developer, the issue is what is the least costly way of achieving a given development? If the provision of say, public open space or social housing, is less costly than acquiring TDRs, they may choose to follow such a path as an alternative.

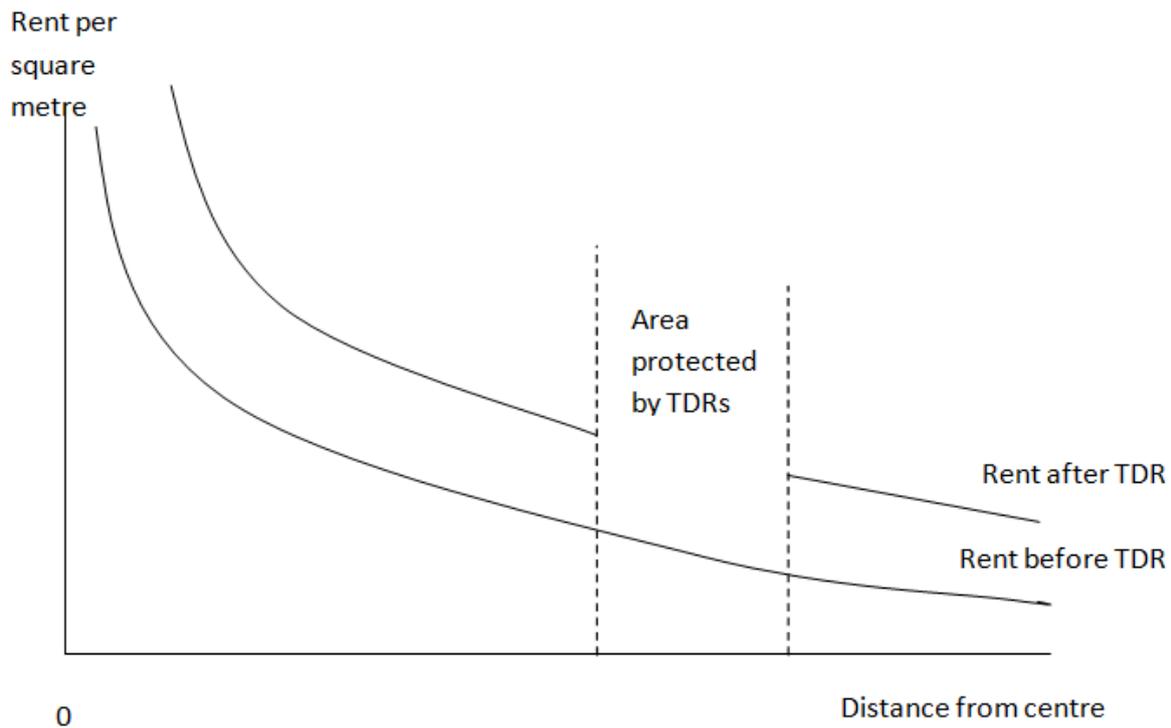
Greater density is not necessarily the way in which to secure the maximum profit from a development. It depends upon the elasticity of demand for floorspace. It may be more profitable to build at a lower density providing the premium price that can be obtained for such space outweighs the losses from extra space that could be sold if TDRs are obtained. There is no simple relationship between density of construction and profitability.

TDRs are not a free good but have to be paid for. The question is on whom do the costs fall? In USA, one possible reason why the number of TDR schemes is relatively low compared with the number of communities may be because they have to be adopted by democratically elected local governments. This means persuading the majority of the population in the receiving areas that the adoption of such a scheme is in their best interests. In some cases the advantages may be clear, as with Seattle and King County. But, as some of the case studies like Montgomery County show, communities in receiving areas cannot always be persuaded to accept TDRs. There are losers from TDR schemes and their numbers and their losses have to be minimized and the potential gains they can obtain from the scheme maximized. For instance, suppose a municipality adopts a TDR scheme under which rural areas around urban settlements are protected so that they continue to be farmland. TDRs are available to farmers who voluntarily forgo the opportunities for developing their land. TDRs can be used in receiving areas in the urban centers, which experience greater density of development. One might argue that the receiving areas benefit from the environment created by the surrounding rural areas. Residents in the receiving areas may object to the changes in the character of their area that greater intensity of development may bring or fear that it will lead to congestion of infrastructure or facilities.

Much of the commentary on TDRs emphasizes how they enable local governments to achieve objectives such as the preservation of the countryside or historic buildings at no cost to their own budgets. This may be the case but there is a cost to TDRs even if this is not paid for directly out of government budgets. TDRs are not a cost-free policy. As was seen in the

King County case, there may be costs to the budget from paying for amenities in receiving areas and from servicing the debt needed to establish TDR banks as well as the administrative costs of the TDR program itself. In addition, TDRs have the effect of raising the cost of land in the receiving areas. This is illustrated by Figure 5.1. In Figure 5.1 there are two rent curves that show how rents decline as one moves away from the city center. In the lower one, it is possible to find lower price accommodation in surrounding areas. Households, for instance, have time and money constraints. Time budgets must be allocated between work, travel to work, and non-work activities. Some households may choose to trade off lower costs of accommodation against higher travel costs and greater travel time and undertake longer commuting journeys in order to access affordable housing. If development is restricted in areas surrounding the urban area by a TDR policy aimed at preserving the countryside, this forces demand into a more restricted geographical space and forces the rent curve upwards. Businesses may also be faced with higher premises costs if they are unable to undertake developments in surrounding areas. Similar points can also be made about policies that protect historic properties and thereby force up the costs of residential and commercial space elsewhere in a city. The TDR policy may not have resulted in expenditure by the local government but has resulted in higher premises costs in the receiving areas for businesses and households.

Figure 5.1 Impact of TDR Programs on Receiving Areas



The beneficiaries of TDR policies are those land owners who are able to exploit the development potential of their properties, even though they are not required to actually undertake the development. They are enabled to access part of the equity they own in the property without either selling or mortgaging it. As has been argued above, in some cases the

owners receive a bonus since they are able to acquire TDRs when there is no realistic prospect of being able to develop their properties. As Figure 5.1 indicates, those who already own property in the receiving areas are also likely to benefit from an uplift in the values of their properties by virtue of the removal from the market of alternative supplies of land from the sending areas. The losers are businesses and households seeking accommodation in the receiving areas, who will be faced with higher costs. The implication is that there are distributional consequences from a TDR policy since it involves the transfer of wealth from one group to another.

The actual distributional consequences vary between schemes. They could include start up business and young and low-income families in the receiving area bearing higher accommodation costs whilst there is a boost to the wealth of rich landowners of historic properties or of rural land. Alternatively, they could involve affluent city dwellers and prosperous urban businesses helping to subsidize struggling farmers who are enabled to access much needed capital tied up in their property by obtaining TDRs. Help might be provided to struggling institutions finding difficulty in maintaining historic buildings by affluent urban populations meeting the costs of TDRs. Only empirical studies can identify which of many possible consequences result from a given TDR policy. However, what the policy does involve is one group (in the receiving areas) transferring wealth to another group (in the sending areas). Unlike a tax and subsidy policy that can be designed in such a way as to be equitable and ensure that the costs fall on those with the ability to pay, with a TDR policy the consequences are less clear and are not transparent.

6 Conclusions

(i) At the heart of a transferable development rights (TDR) program lies a simple concept. Vulnerable land and buildings can be protected from being destroyed by development by persuading their owners voluntarily to accept restrictions on their ability to undertake legally permitted redevelopment. In return they receive credits which can be sold to developers wishing to undertake development in designated receiving areas. These developers can make use of the credits to undertake greater density of development than would otherwise be permitted, thereby recovering the cost of acquiring TDRs. The vulnerable properties and areas are designated as sending areas and owners of such buildings or land can be granted TDRs in return for entering into legally binding agreements (generally known as easements) to refrain from development. These are registered as restrictions on the property rights associated with these properties.

(ii) TDR programs have been used for a variety of purposes, principally to protect historic buildings from demolition; to protect historic uses of land by preventing the buildings occupied by them from being redeveloped for other purposes; to preserve farmland and the countryside from development; to prevent the development of environmentally sensitive areas; and to achieve urban design objectives such as mixed land uses, the provision of public open space, and the control of traffic congestion.

(iii) Although TDR programs are based upon a simple idea, namely transferring development potential from a sending area that needs protection to a receiving area capable

of absorbing it, they are in reality complex to administer. For instance, easements restricting the development of those properties whose owners have accepted TDRs have to be registered, the TDRs used by developers in receiving areas must be traceable back to a sending site, conditions attached to the issuing of TDRs within the sending area need to be enforced, and conditions have to be set and enforced over the use of TDRs in receiving areas. It is unsurprising therefore that a number of proposed TDR schemes do not come to fruition. Many of the exemplars of best practice are large schemes, which suggest that there may be economies of scale in TDR schemes under which fixed costs of establishing and running them can be spread over a large number of transactions.

(iv) There is no single way in which TDR programs are carried out. Each program is different. Differences include what is permitted by way of development in the sending areas, the means by which credits on properties in the sending areas are set; the ways in which developers can use credits in the receiving areas; the degree of power that communities in the receiving areas have to block developments utilizing TDRs; the benefits that developers can enjoy by utilizing TDRs in the receiving areas; whether developers can obtain density bonuses in the receiving areas by means other than the use of TDRs, whether the policy is supported by a TDR bank able to buy and sell TDRs; the terms of reference of any TDR bank such as the prices it can pay for credits and the terms on which it can sell them; whether receiving areas receive financial assistance in accommodating additional developments; and whether TDR programs are supported by higher property taxes to help finance them. These differences mean that a TDR program designed for use in one area may not function effectively if applied to the conditions in another area.

(v) Effective TDR programs do not generally function in isolation but as one element in a raft of policies aimed at tackling a particular issue. These invariably include zoning and town planning policies, and but can also include tax allowances, technical assistance programs, farming promotion programs, conservation programs, and policies to acquire and manage land by governments or local authorities.

(vi) Participation in TDR programs is voluntary. Owners in the sending areas voluntarily chose to accept restrictions on their development rights or easements over their properties in return for TDRs. They cannot be compelled to do so. TDRs are not used as compensation for expropriation. Developers voluntarily acquire TDRs in order to undertake developments in receiving areas. Communities in receiving areas must voluntarily accept greater development density.

(vii) TDR programs can only work if there is demand for development in the receiving areas. They usually seek to achieve this by artificially depressing the level of development that is permitted in these areas so that developers are obliged to acquire TDRs in order to undertake profitable developments. The baseline set for development may well be below that which is desirable on town planning grounds. A problem in some TDR schemes is that developers can secure exemptions from the need to acquire credits, thus undermining the market, or may be able to secure credits for other purposes, such as providing affordable housing or public open space. There is also no automatic relationship between greater density

and the profitability of development. Therefore, offer developers a means of avoiding restrictions on the density of development by acquiring TDRs does not necessarily increase the profitability of developments.

(viii) TDR schemes cannot be used in expropriation or compulsory purchase (eminent domain in US terminology). This is because the credits are uncertain in value. They depend on demand from developers seeking to undertake developments in receiving areas. The result is that prices fluctuate over time and there are likely to be periods in which there is no market for the credits because of recession in the property market. Offering TDRs as compensation for expropriation breaches the 5th Amendment to US Constitution and is likely to breach Article 1 of Protocol 1 of the European Convention on Human Rights as the value of the credits offered is uncertain and prompt payment of compensation cannot be guaranteed.

(ix) TDR programs are often argued to be a way in which objectives such as the preservation of historic buildings or the countryside can be achieved without cost to public finances as the costs will be met through the generation of TDRs. This is misleading. TDR programs are likely to incur significant administrative costs in areas such as registering TDRs and their transfer, enforcing easements and zoning conditions, and the operation of TDR exchanges and banks. Higher property taxes may have to be imposed to fund improvements and infrastructure in receiving areas and to service the debt raised to enable TDR banks to function. The costs may not be obvious or gathered under a single budget heading but this does not mean they do not exist.

(x) TDR programs impose costs on receiving areas. They are obliged to accept higher densities of development than would otherwise be the case. In some cases, they are well able to absorb such development but in others there may be congestion or an inability of infrastructure to cope with the increase. Communities in the receiving areas may oppose TDR programs because of the changes they bring to their areas and seek to find ways of undermining them. In any case, TDR programs increase the costs of development in receiving areas so that a significant part of the cost of attaining the objectives falls on their residents and businesses, which are faced with higher accommodation and premises costs. This implies a redistribution of wealth from the receiving areas to the sending areas. There is the danger that such redistribution could be regressive in its impact.

(xi) There is the danger that TDR programs may not be cost effective. Credits may be most attractive to those owners in sending areas who have no intention of developing their land. They can use TDRs as a means of accessing the equity they have tied up in the land which might otherwise be unobtainable. Unless TDR schemes are carefully designed with graduated compensation according to the risk of development, the owners offering the development rights over their land in exchange for credits may be those for which development is least attractive, such as farmland that is at a distance from a growing urban area. Credits may therefore be wasted.

(xii) Certain legal conditions favor the use of TDRs. The USA, where most of the TDR programs are to be found, has a common law system of land ownership in which a range of

rights over land is owned rather than there being absolute ownership. Ownership patterns are often characterized as being a bundle of rights. This makes it possible to remove certain ownership rights whilst owners retain others. Thus, the right to develop the land might be given up in exchange for TDRs but the owner continues to own the land and may live on it or work it. TDR programs are only likely to work in countries in which it is possible to own partial rights over land rather than ownership always implying ownership of a full set of rights. Having a common law system of land ownership undoubtedly facilitates TDR programs though there is no reason why countries with legal codes should not adopt legislation that would enable them to implement TDRs. There may be public resistance to the idea that land ownership does not convey absolute rights but ones that may be restricted as a result of easements or covenants imposed as part of a TDR program, which a previous owner has voluntarily accepted.

(xiii) Countries adopting TDR programs need to be able to exercise strong controls over development so that owners in sending areas are prevented from undertaking development once they have accepted TDRs in exchange for easements over their property and developers cannot evade acquiring TDRs in receiving areas through illegal construction, unauthorized densities like extra storeys on buildings, or persuading local authorities to relax floor area ratios. It is unlikely that a TDR program can be effective in a country which has a problem with illegal construction or is unable to control development densities, for instance because it lacks information about what development is taking place.

(xiv) Implicit in TDR programs is the idea that owners have the right to undertake development if this maximizes the value of their land irrespective of the impact this has on others. They should therefore be compensated for refraining from doing so. An alternative philosophy is that the polluter pays and should either desist from doing things that adversely affect others or else pay compensation to those affected or put in place mitigating measures.

(xv) Any country considering introducing a TDR program should consider what it is trying to achieve as they are not “magic bullets” and often come with significant direct and indirect costs. There are usually alternative policies capable of realizing the same objectives. Once the objectives are clear, it will be possible to determine whether TDRs are the optimum solution to the problem or whether alternatives would be preferable.

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