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Transfer of Development Rights [1]

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Abstract

In recent years a number of emerging economies have experimented with the use of transferrable development rights (TDRs) to support urban development, including Brazil, India, and Turkey. Most TDR schemes are found in USA and are used to protect vulnerable land and buildings from being destroyed by development by persuading their owners voluntarily to accept restrictions on their ability to undertake legally permitted development in return for credits which can be sold to developers for use in designated receiving areas. The paper examines the potential uses of TDRs and the economic and governance environment needed to make them effective. It considers how effective a spatial planning tool TDRs are likely to be in emerging economies and whether there are better alternative ways of achieving the objectives aimed for in TDR programs.

Key words: transferrable development rights, emerging economies, heritage preservation, environmental conservation

1. Introduction

The concept behind transferable development rights (TDR) programs is a simple one. Vulnerable land and buildings in a *sending* area can be protected from being destroyed by persuading their owners *voluntarily* to accept restrictions on their ability to undertake legally permitted development allowed under zoning plans. In return those owners receive credits which can be sold to developers in designated *receiving* areas. The revenue received from the sale of TDRs should compensate 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. Developers in the receiving areas are able to use the credits to construct at a higher

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density than would otherwise be permitted. In this way they can recoup the costs of acquiring TDRs through the additional profits they can make from developing at enhanced density.

Most examples of TDR programs are to be found in the USA, with 239 having been identified by *The TDR Handbook* (Nelson et. al., 2012). They are mainly aimed at achieving the conservation of historical buildings, landmarks, and streetscapes in urban areas, the protection of farmland and rural areas from development, the preservation of environmentally sensitive areas, or to achieve improvements in urban design and the quality of urban areas. Covenants or easements are imposed on current and future owners restricting their property rights and the ability to develop or redevelop their property. The fundamental feature of the policy is that this is done through restrictions that owners voluntarily enter into. They can choose to accept the restriction or not. There is no penalty for declining to accept the restriction and no coercion can be used to compel acceptance. The USA tends to use a zoning system of spatial planning under which owners have the right to undertake any development that is in accordance with the zoning plan. Owners have to be compensated for not exercising these rights rather than their having to seek consent for development which could be refused. As TDRs do not require public bodies to pay financial compensation to those owners who forgo development rights, they are perceived to be a financially attractive way of securing the objectives of public policy. Public bodies do not need to find significant cash sums to buy out development rights or give grants to secure policy objectives but can instead issue TDR credits. Although not costless, TDR programs can be argued to require only relatively limited public finance to function.

If TDRs had remained a phenomenon found almost exclusively in USA, then the debate about how effective and costly they are compared with alternative policies would have largely been a domestic one. However, some emerging economies have sought to make use of them, notably Brazil to help fund public infrastructure and flood prevention programs (Smolka, 2013) and Mumbai in India to fund infrastructure development, slum redevelopment, and heritage preservation (Dharmavaram, 2013). Some experiments have also taken place in in Istanbul in Turkey but with limited success because of the absence of enabling legislation. Their attractiveness to governments in emerging economies is clear. TDRs require relatively little cash outlay on the part of public bodies to achieve their objectives. This is of merit in countries where local government finances are constrained. The ability to achieve spatial planning objectives, such as the provision of infrastructure or affordable housing or the preservation of heritage through grants of paper rights rather than through public expenditure is seen to be highly desirable, particularly in countries with limited ability to levy local taxes.

The use of TDRs in emerging economies though, raises the question as to what extent TDRs are an efficient and effective means of achieving the objectives set for them or whether it is more desirable for other policy instruments to be used instead. If TDRs re regarded as being an effective policy instrument, then the question arises as to whether the conditions that have made possible their widespread use in the USA are also to be found in emerging economies.

2. Transferable development rights programs in USA

It is important to recognize that there is no national (federal) policy on TDRs in the USA, this being a matter for states and local communities to determine. The result is that TDR schemes vary considerably in the ways in which they are implemented in key 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 make a market in certificates, whether TDRs form part of a wider portfolio of policies, and whether the TDR policy is supported by the imposition of additional local taxes. As *The TDR Handbook* noted (Nelson et. al., 2012), in 2010 25 of the 50 states had adopted TDR enabling legislation, though another eight and the District of Columbia had active programs with no enabling legislation, and North Carolina had an enabling statute but no local programs. Enabling legislation in states varied from brief grants of power, as in Colorado and Massachusetts, to statements of principle backed up by implementation and administrative processes and ordinances, as in New Jersey and Washington State. The local diversity makes it difficult to talk about a single TDR policy rather than a series of approaches to TDRs.

At the heart of TDR programs are three voluntary acts. One is on the part of the land owner who freely accepts restrictions on his property such as density restrictions on development or an obligation to maintain a historic building. These are binding on subsequent owners and can be expected to depress the resale and mortgage values of the property. 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 is permitted and finds it financially worthwhile to acquire the necessary TDRs to make this possible. The third voluntary act is on the part of the receiving community that must be willing to accept greater density of development.

The typical objectives of TDR policy as practiced in USA, as was noted above, are to protect areas of farmland from urban encroachment and areas of outstanding natural beauty or environmental importance from destruction by development that would otherwise take place under zoning regulations. In urban areas historic buildings and heritage streetscapes can be protected from demolition prior to the redevelopment of their sites.

A number of cities have TDR programs designed to protect historic buildings and streetscapes, including New York and Washington DC but not Boston. Washington DC's transferable TDR program[2] 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 this since 1984. 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

[2] The zoning regulations for Washington DC can be found at: https://dcoz.dc.gov/zrr/zr16

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. The current emphasis is on housing because the aim of preserving historic buildings has largely been met. Actions that generate credits include residential development, 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 area for a child development center or Certified Business Enterprise (CBE). 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. Density bonuses have been used as an alternative to grants for the restoration of historic buildings.

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). 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. Economically, the system depends upon continuing demand for offices in the city. In periods of recession demand for TDRs has slumped.

New York City[3] 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 ordnance dates from 1968. New York has four main TDR mechanisms: zoning lot mergers (ZLM), landmark transfers, Special District transfer mechanisms, and transfer provisions in Large-Scale Development Plans. It would be a mistake to say that New York has a TDR policy but rather 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. 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. TDRs do not function in isolation but form part of the range of planning and zoning policies.

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 and do not have to be under a single ownership or lease. All that is required is that a Zoning Lot Development

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[3] Zoning regulations for New York City 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).

Agreement (ZLMs) is executed by the various parties and recorded at the Department of Finance. As ZLMs do not allow for exemptions from 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. 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. It has resulted in the growth of extremely tall buildings.

Landmark transfers 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. 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. Owners of landmark buildings can sell unused development rights to adjacent properties. 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.

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. For instance, the South Street Seaport Sub-district encompasses the historic seaport area adjacent to the Brooklyn Bridge. The buildings date mainly from after the disastrous fire of 1835 (Burrows and Wallace, 1999). They are low rise and low density but close to Wall Street and the Financial District, with views across the East River attractive for high rise residential developments. The granting sites were historic buildings which were in the process of defaulting on their mortgages. They were able to convey the TDRs to a TDR bank for subsequent disposal to a receiving lot with the commercial banks holding mortgages accepting TDRs in partial satisfaction of their debts. The area has become a popular recreational one, aided by its proximity to the Brooklyn Bridge, with a mix of uses that probably contributes to the attractiveness of the area for tourists and visitors. 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. 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.

Montgomery County, Maryland, and King County, Washington, are examples of the use of TDR programs to protect rural areas and farmland from development. Montgomery County[4] 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, with the remainder being preserved in federal, state, and county parks (Nelson et. al., 2012). 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 solution was seen to be the adoption of a TDR policy under which owners voluntarily accept easements restricting development in exchange for credits whilst continuing to live on their property and work it as a farm. In effect, the TDR policy was adopted to tackle the adverse consequences of a change in the zoning policy.

In 1990 Washington State adopted a Growth Management Act from which stemmed an Urban Growth Boundary in King County[5] 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 outside of the county, with the cross jurisdictional element becoming permanent in 2001. Receiving areas include parts of Seattle. The cross jurisdictional element overcomes the problem found in some TDR programs that the small towns designated as receiving areas do not have the economic capacity to absorb extra development. Sending sites must have agricultural or forestry potential, or be a critical wildlife habitat, open space, green belt between urban areas, or regional trail connector (Nelson et. al., 2012). There are requirements on the easements, such as a forestry stewardship plan. The receiving areas can determine the type of property from which they will accept TDRs.

Cupertino, California, is an example of TDRs being used for urban design purposes, in this case to control traffic congestion. It is a community of about 55,000 people near San Jose, in Silicon Valley, where property is in demand from technological companies. It is the location

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[4] Details of the Montgomery County program and presentations explaining it can be found at: https://www.montgomerycountymd.gov/

[5] The documents for the King County program can be accessed at: https://kingcounty.gov/services/environment/stewardship/sustainable-building/transfer-development-rights/

of Apple's corporate headquarters. In 1972 it decided that vehicle trips on its two main streets would have to be limited to avoid congestion. 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. Developers and occupiers have an incentive to reduce the number of trips as unused trips can be monetized through being sold on. This type of program is only likely to be effective if there is demand for business space. 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 Seattle employers 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. Transferrable Development Rights in Emerging Economies

Brazil has made use of TDRs as well as 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 the Floor Area Ratios (FARs) for an area. They can be traded and sold to contractors. 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. As permitted development is likely to be below that which would make development viable, developers must acquire either TDRs or OOSCs. TDRs are generally made available to land owners to partially fund public infrastructure and the OOSCs are financial contributions to infrastructure. Developers are therefore obliged to contribute to the financing of infrastructure and other items of public benefit either by buying TDRs or bidding for OOSCs at auction. Examples of TDRs include the acquisition of land for a new arterial roads in Porto Alegre, to help finance a soccer stadium for the 2014 World Cup in Curitiba, and to develop a flood prevention programme of overflow areas and storage lakes in Curtiba (Smolka, 2013). Neither TDRs nor OOSCs can be effective unless there is pent-up demand for development in the receiving areas. However, 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).

TDRs have been used in Mumbai since 1961 to fund infrastructure development, slum redevelopment, and heritage preservation (Dharmavaram, 2013). The Central Business District is the main sending area with suburbs as the receiving areas though suburbs redirect development between wards. The aim is to encourage development in lower density areas. However, the uncontrolled issuing of TDRs created gluts and reduced the benefits to a level where developments are not viable. In the past the programme failed to protect environmentally vulnerable areas by directing social housing towards coastal areas.

In Turkey there have been three experiments with TDRs in Istanbul. The aims have been to clear riverbeds of occupancy, to create a public space on the seafront, and to remove buildings at risk of earthquakes. However, there is no TDR law in Turkey. Problems have been encountered with residents being unwilling to move and challenges in the courts.

4. How efficient are TDRs in achieving their objectives?

TDRs use market mechanisms to achieve their results (McConnell et.al., 2006). Owners in the sending areas receive certificates in return for accepting restrictions on the development of their property and the compensation is monetized by selling these to developers in receiving areas. The certificates only have a monetary value if there is demand for them on the part of developers. Without such demand, a TDR program must fail as those giving up their development rights will not receive financial compensation. The cost to developers of acquiring each TDR unit must be less than the profit that they expect to make from using it to develop more intensively in the receiving area. The underlying demand for property in cities like Washington DC, Seattle, and New York helps to explain the success of their TDR programs, but even here in periods of recession demand for TDRs slumps.

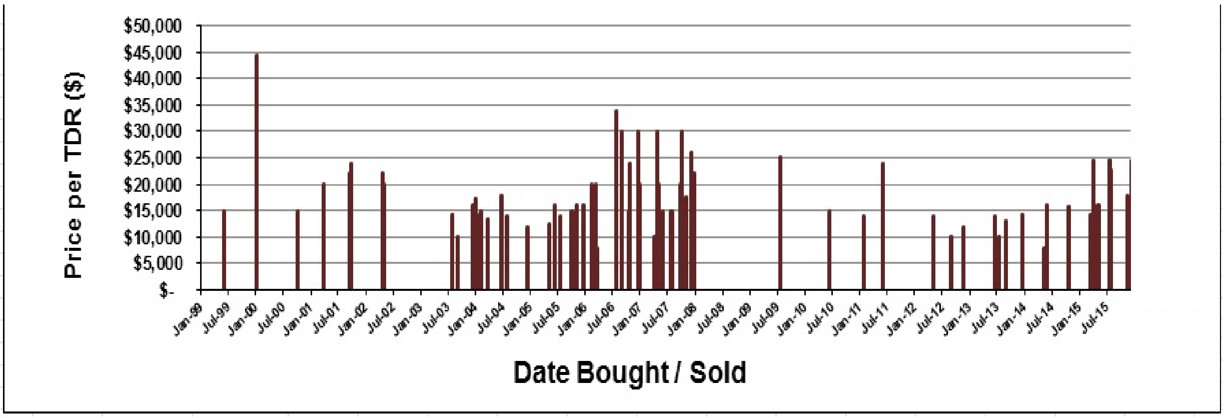
One problem encountered in TDR programs is the cyclical nature of demand in the property market. The market is characterized by periodic booms and slumps. During recessions the value of TDR certificates can be expected to fall whereas they can rise in boom periods, when developers seek opportunities for undertaking developments. The certificates can be argued to have an uncertain and fluctuating value, which depends on the state of the property market in receiving areas and therefore the prices developers are willing to pay to acquire them. There may be no demand for the certificates at all if the market is in recession and no development is taking place. The problem that can be encountered in rural protection programs is that the receiving areas in rural areas and small towns may offer few development opportunities in which TDRs can be absorbed. Even where there is demand within the receiving areas, the value of TDR certificates can fluctuate or the market for them dry up periodically.

Figure 1 Numbers of TDRs Bought and Sold in King County, Washington

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

King County, Washington, is widely regarded as having one of the most successful rural protection TDR programs. Figure 1 shows how the market for its TDRs 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 development on their land. Figure 2 shows how average prices for TDRs in King County have varied over time. 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. Since the TDR does not stop the owner from living on his property or working his farm or running his business, owners may well find it acceptable to bank the TDR until the circumstances for sale are favorable, but their monetary value and the timing of when this can be realized is uncertain.

Figure 2 Standardized average prices per TDR, King County, Washington



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

One way in which TDR programs can help make a market for the certificates is to restrict the intensity of development in the receiving areas. This is typically achieved by setting a lower floor to area ratio (FAR) than would be acceptable in spatial planning grounds so that developers are compelled to acquire TDRs in order to undertake profitable developments. In effect, there are two FARs in the receiving areas – the one that is acceptable and desirable on town planning grounds and an artificially set lower level that is imposed to compel developers to acquire TDRs. Such an approach does undermine town planning since it could be argued that development conditions are not imposed on merit in the receiving areas but so as to create a market for TDRs. Problems can occur if developers find it profitable to develop at the lower FARs rather than seek TDRs. Development may therefore occur at a lower density than would be desirable on town planning grounds. There are often benefits from greater intensity of development such as making investment in infrastructure and public transport viable and enabling businesses to thrive which would not survive at lower population densities. 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.

A TDR program can be undermined if developers are able to undertake developments without the need to obtain TDRs. For instance in Montgomery County, Maryland, there is a rule that two-thirds of the maximum permissible 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). 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.

One strategy that has been used to overcome fluctuating prices for TDR certificates and the market in them periodically drying up is to create a TDR bank, which can make a market in the certificates by buying them from land owners and selling them to developers and acting as the buyer of last resort for those owners who would otherwise be unable to sell their certificates. This is not a costless solution since the bank has to be capitalized in order to be able to function. Capital may have to be raised through borrowing, which creates loans that have to be serviced. It may require equity which has to be raised through local taxation. Montgomery County had a Development Rights Bank to buy TDRs and resell them at a later date but as owners were able to sell their right to developers, the bank was closed as it was unused. The result was lack of information centrally about what is happening in the TDR market and a less transparent market for both developers and land owners (Walls and McConnell, 2007).

Development plans cannot be imposed on communities in receiving areas but have to be with their consent. Communities 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 the case that greater density of development will increase property tax yields. For instance, Montgomery County, Maryland 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 but a maximum density that can only be reached with the use of them. However, others do not designate any locations where TDRs can be used and the allowable density is often below the maximum permitted so developers cannot make effective use of TDRs (Walls and McConnell, 2007). By contrast in the New Jersey Pinelands 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 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, preventing local communities from barring the use of TDRs. Discretionary extra densities were 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 (Pruetz, 2003, Nelson et. al., 2012).

Receiving areas must have the infrastructure in place and capacity to accept a greater density of development. TDRs direct development away from areas which are unable to absorb it and re-direct it towards areas which should have the capacity to do so or where development is not considered to have damaging consequences. In the New Jersey Pinelands scheme there has been investment in infrastructure in the receiving areas, such as sewer improvements, to facilitate greater development density and a public outreach campaign (Pruetz, 2003, Nelson et. al., 2012). The budget for the King County TDR program since 1998 has included funding payable to the participating cities for amenities. The amenity funds can be spent on projects such as public art, cultural or community facilities, drainage, roads, public transport, and landscaping. The need to carry out investment in infrastructure in receiving areas or to provide finance to receiving areas to make acceptance of development more palatable adds to the costs of a TDR program and may even require the levying of property taxes to enable it to function effectively. It means that TDR programs are not necessarily costless.

Rights over land are constrained by one's neighbors' rights to the quiet enjoyment of their property. 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 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. Different systems adopt alternative approaches to the balance between obliging those undertaking development to compensate their neighbors for any nuisance caused and the neighbors having to compensate a potential developer for not carrying out a development that might have adverse consequences for them. They also take different approaches towards what may be regarded as common property resources and what should be regarded as being purely individual property. This has implications as to whether someone who wishes to destroy a historical building or habitat in order to maximize the value of his property should be permitted to do so on the grounds that this is private property or whether this should be restricted on the grounds that a historical building or an environmentally sensitive site is a common property resource. The approach in TDR programs is to offer compensation to potential developers to refrain from actions such as destroying historic buildings or landscapes rather than denying them the right to do so and requiring them to seek permission to do so. The emphasis with TDRs schemes is on compensating owners for not destroying what might be regarded as common property resources rather than requiring owners to seek permission before such destruction is allowed. Private property rights trump common property resources.

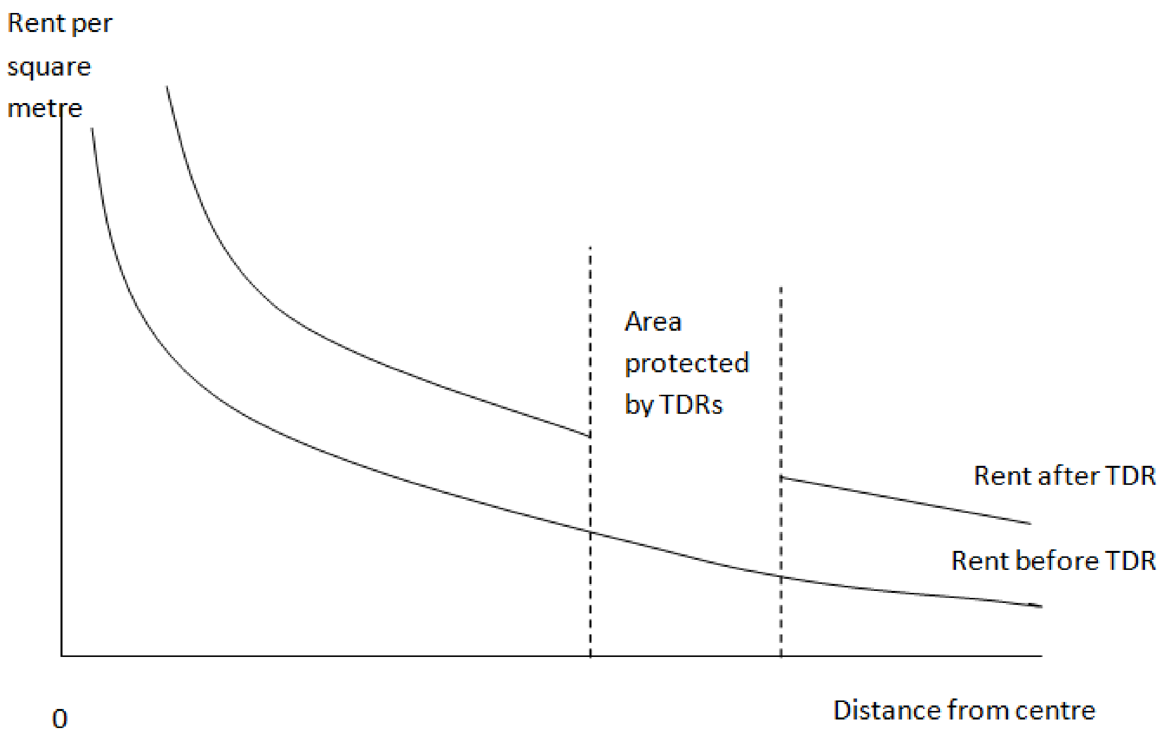
The difference between these two approaches can be illustrated by contrasting the approaches taken in the Pinelands, New Jersey, and the Adirondacks State Park, New York. During the 1970s the New Jersey Pinelands came under pressure from the growth of Atlantic City (Pruetz, 2003). The area provides recreational opportunities for residents of a densely populated area that includes New York City and Philadelphia. The Pinelands comprises pine and oak forests, swamps, bogs, and marshes, is home to a wide variety of plants, birds, mammals, reptiles, and amphibians, and contains a large aquifer. They 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. It has a TDR program under which land owners in sending sites can obtain Pineland Development Credits (PDC), which vary according to the development potential and environmental sensitivity of the sending site (Pruetz, 2003, Nelson et. al., 2012). The Adirondacks State Park in the neighboring state of New York is the largest protected natural area in the lower 48 states of USA (ie excluding Alaska). The New York Forest Preserve was established in 1885 and about 52 per cent of the land is in private ownership, with the remainder belonging to the State of New York (Adirondacks Park Agency, n.d). The Adirondack Park Agency[6] 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. There is no TDR program but growth is channeled to where it can best be accommodated, including hamlets and designated industrial zones. Most uses require a permit and special care is taken to preserve open spaces. 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 set 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. This can include being refused the right to rebuild an existing dock or boathouse when it is at the end of its life. By contrast, 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.

The impression is sometimes given that TDRs are a free good. Desirable objectives like the preservation of historic buildings and environmentally sensitive areas are achieved without cost to local authorities' budgets but through the issuing of TDRs. The reality is that TDR programs have to be paid for and an important question is, on whom do the costs fall? There may be costs to the budget from paying for amenities in receiving areas, as in King County with Seattle and in New Jersey Pinelands and from servicing the debt needed to establish TDR banks, as well

[6] The documents on which this section is based can be accessed at: https://www.apa.ny.gov/

as the administrative costs of the TDR program itself, such as the maintenance of registers and checks on whether conditions imposed through TDRs are being met. For instance, King County has a dedicated part of the property tax that generates more than $10 million per year for open space preservation and it has also raised significant amounts in bonds to acquire open space or farmland (Pruetz, 2012). TDR programs rarely function in isolation but are usually one element in a raft of policies. In Montgomery County there are farming support services, such as buy local campaigns, farmers' markets, and advice services to help develop and maintain agriculture. 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. Owners can also obtain tax benefits from donating easements for conservation purposes. In this case, more land in the reserve was preserved through federal, state, and county parks than through TDRs. (Pruetz, 2012).

Figure 3 Impact of TDR Programs on Land Values in Receiving Areas



TDRs are likely to have the effect of raising the cost of land in the receiving areas. In Figure 3 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 cheaper accommodation in surrounding areas. Households and businesses may choose to trade off lower costs of accommodation against higher travel costs and travel time and less accessibility. 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 and households 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 streetscapes, thereby forcing up the costs of residential and commercial space elsewhere in a city. The TDR policy may not cause extra in expenditure by the local government but can result in higher premises costs for businesses and households in the receiving areas.

The beneficiaries of TDR policies are those land owners who are able to exploit the development potential of their properties without having to undertake development or relocating elsewhere. They are able to access part of their equity in the property without either selling or mortgaging it. As Figure 3 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 competing land in 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 likely to be 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 businesses and young and low-income families in receiving areas bearing higher accommodation costs whilst there is a boost to the wealth of rich landowners of historic properties or of rural land. For instance, beneficiaries of New York's TDR policy have included St Thomas's Church and the Universities Club. 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. For instance, Seattle can be argued to have benefitted from the King County preserving the countryside beyond its boundaries because of its impact on water and air quality as well as the recreational facilities these provide but there has been criticism that the receiving 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). Only empirical studies can identify which of the 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. TDRs are not a costless policy and their imposition can be, but is not necessarily, inequitable.

Proponents of TDR programs tend to measure their success in terms of the number of buildings or acres of land saved in the sense that TDRs for them have been accepted by their owners. This raises an important question as to whether all of these properties are actually threatened by development or whether TDRs are a way of enabling the owners of some properties to extract equity from their properties in exchange for not undertaking development for which there is no realistic prospect in the foreseeable future. In Montgomery County 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. 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). The 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 had no intention of developing their land, though this may be a way of levering capital into agriculture and enabling them to remain as farmers. Even if development is economically viable, the owners may still not be willing to see it take place since it is likely to involve the destruction or diminution in the environment of where they live. Research into the motivation of landowners in the urban fringes in the USA indicates that factors such as lifestyle, willingness to help neighbours, the wish to pass on land to their families, and to preserve a way of life can also play a significant part in the decision whether to release land for development (Molinsky 2006, Zhu & Bostic 2009). There is the suspicion that TDR programs might over-compensate landowners who have limited prospects for developing their land whilst encouraging a higher level of development through the generation TDRs than would otherwise have been the case. For instance, changing farming patterns in Montgomery County have resulted in a decline in animal husbandry and growth in areas like vegetables, nurseries, greenhouses, and horse and pony husbandry (Walls and McConnell, 2007). The areas remaining in agricultural production are ones which are capable of generating higher incomes per acre. The value of such land has risen making development both less attractive as an option and less affordable for developers.

These issues do not just apply in rural areas. For instance, in New York the creation of the Theatre Sub-district has been used to protect a particular land use. The aim was to protect theatres from Midtown office development and the expansion of hotels around Time Square. The present scheme dates from 1998 and allows listed theatres to transfer TDRs anywhere within the Theatre Sub-district. It also created a fund to promote theatre use. Theatres have to covenant to operate as a legitimate theatre for at least five years as there is demand in the area for performance space for “adult” entertainment. There must be proof that the building is physically and operationally sound and a contract for the commitment to legitimate theatre for the life of the receiving site development (Pruetz, 2003). An example is the Al Hirchfeld Theatre (dating from 1924) that had four TDRs totaling almost 74,000 square feet in 2006-07. 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.

TDR programs are not costless but involves explicit as well as hidden costs. There are questions about their effectiveness such as whether all the properties receiving TDRs are really under threat from development. As there are usually alternative policies capable of realizing the same objectives, such as restrictions on the development of historical buildings and environmentally sensitive areas, and these should be considered before deciding that a TDR program offers the best or most cost-effective option.

5. Whether the conditions that have made for their widespread use in the USA are replicable in emerging economies

The USA has a particular form of landownership inherited from English common law. Under this, there is no concept of absolute ownership but rather that owners own various rights over the land. The rights can be divided so that owners can possess different bundles of rights from their neighbors. There can be multiple persons and bodies owning different rights over a property. Past owners may have sold partial rights or granted them to others, or even reserved them to themselves when the property is sold. Thus a property might have a restrictive covenant imposed on it which is binding on all future owners. For instance, a past owner of a parcel might have sold it with a covenant preventing sales of alcohol from it. Subsequent owners 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, can place restrictions on the use of the land they have sold in order to prevent developments undermining the value of their remaining land, such as stipulating that the houses built on it must be of a minimum value or prohibiting development altogether. The market price of any specific piece of land reflects the restrictive covenants that apply to it and the limitations on the rights of future owners. TDR programs can exploit the ability to impose restrictive covenants. Owners who voluntarily take part in the program accept covenants over their property in return for TDRs that can be sold to developers. Covenants can oblige the current and subsequent owners not to undertake development, to maintain a historic building, or not to undertake certain activities, such as using a theatre for "adult" entertainment. Covenants can be registered as a restriction on the title. Special legislation is not required for the imposition of easements and covenants. Current owners voluntarily accept that the result will be a diminution in the value of their property due to the restrictions placed on the ownership rights, but have freely entered into this agreement and receive compensation in the form of TDRs. They have made a fully informed and rational choice that they consider to be in their best interests.

If a country's laws do not permit the imposition of covenants and the division of ownership rights so that part of the bundle of rights is alienated, it may need to introduce legislation to permit the imposition of the covenants and easements required by a TDR program. The code must allow ownership rights to be fragmented so that different parts of the bundle of rights can be under different ownerships. For instance, the right to develop farmland or to demolish a historic building may belong to the local authority and not the current owner. The restrictions need to be registered or they may not be enforceable or capable of being discovered by prospective owners.

TDR programs require not only a legal basis but also popular support. In common law countries, the existence of restrictive covenants is a normal aspect of the property market and prudent buyers carry out due diligence checks looking for these before they commit to a contract of sale. In countries where it is not normal for the bundle of rights to be divided, a TDR program may also encounter resistance to restrictions on absolute ownership that the existence of such easements and covenants implies, and unwillingness to be bound by restrictions entered into by previous owners. Title registration systems must record restrictive covenants and there needs to be effective enforcement action taken in the event of breaches. This includes the demolition of developments undertaken in breach of covenants and obliging owners who breach the covenants to restore land and buildings back to the conditions they were in prior to the breach occurring. An effective TDR program requires the existence of comprehensive registration of properties and the recording of restrictions over title as well as the willingness and ability to take enforcement action in the event of breaches of restrictions. The breaches may be by a subsequent owner who is unwilling or unable to understand why his property rights should be restricted.

TDRs are rule-based systems. A TDR system can only flourish if there is an expectation that laws will be obeyed and enforced, that the judicial system and the policing of regulations is largely free from corruption, and that zoning controls and covenants and easements can be enforced. Successful TDR programs require there to be demand for the certificates issued for development in the receiving areas. This typically involves setting development restrictions through a low floor to area ratio (FAR) which can be increased through the acquisition of TDR certificates. Such a policy implies that local authorities are able to control development within the receiving areas so that developing more intensively requires the acquisition of TDR certificates. 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 not being subject to sanctions. If developers are able to develop at their preferred level of intensity without acquiring TDRs, then this will kill the market for the certificates and make them and the restrictions placed on development unattractive to owners in the sending areas. There is no point in developers buying TDRs if they can achieve the same densities by flouting planning regulations. TDR programs are vulnerable to corrupt practices and favoritism whereby developers can obtain consent for more intensive development – or at last avoid enforcement action being taken against them – even though TDRs have not been obtained. Easements and covenants have no value unless backed up by serious and enforceable sanctions. If local authorities lack the will or capacity to police density restrictions, developers can avoid having to acquire TDRs. This does not necessarily have to be through developers constructing an entire building without consent but can be because unauthorized intensification takes place, such as adding another two or three storeys to a permitted development. 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. TDR programs require a minimum standard of land governance to be effective. This includes well developed land information systems and mapping systems so that it is possible to know whether covenants have been breached or not.

Some countries have considered introducing TDR programs as a way of carrying out expropriation without having to pay cash compensation. Instead, those deprived of their property would receive TDRs, which they could sell to developers to obtain compensation. This has an obvious appeal to cash-strapped authorities. The use of TDRs in this way should be distinguished from acquiring authorities offering equivalent land as alternative compensation to cash. A key principle behind expropriation (eminent domain) is that if anyone is deprived of his or her rights in the public interest, they should receive fair and timely compensation for their loss. Compensation should also be payable even if no land is taken but there has been adverse impact on the land owned, such as noise or other nuisance. Restricting the rights of owners so that beneficial use of their land is rendered impossible should be regarded as a form of expropriation[7]. However, a regulation such as restrictions on redeveloping a historic building that prevents the maximization of value but does not render the property incapable of beneficial use is not expropriation[8]. TDRs as used in the USA involve voluntary participation. The certificates received by owners are not compensation for compulsory acquisition but are the result of a voluntary transaction. TDRs cannot be considered fair compensation for expropriation because the value of the certificates is uncertain as the market price can fluctuate and, because demand depends on developers' willingness to acquire them. There is no guarantee that the compensation will be timely as the market can dry up leaving those in possession of certificates without cash to acquire replacement properties.

6. Conclusions

It would not be surprising if TDR programs prove to be attractive to emerging economies. At their heart 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 development in return for which they receive credits which can be sold to developers wishing to undertake greater density of development in designated receiving areas. In this way local governments can achieve desired policy objectives with minimal cash outlay. In some countries officials have seen TDRs as a potential means of carrying out expropriation without paying cash compensation to owners by providing them with credits that could be sold to developers. This is not an acceptable use of TDRs since the compensation paid is uncertain and depends on the state of the property market. The timing of the compensation is also uncertain as the property market is subject to periodic recessions in which TDR certificates have no buyers.

Those in emerging economies who see TDR programs as a costless way of achieving spatial planning objectives need to be aware of the hidden costs of such programs. There must be an enabling legal framework, particularly for those countries with a legal code system. Costs include the costs of establishing and maintaining regulations and procedures, keeping registers of credits granted and their uses, and enforcing compliance with conditions. TDR policies are often undertaken in conjunctions with others, including the management of public lands, development restrictions, grants, and the promotion of farming. TDR banks may need to be established to make a market in the certificates, particularly in periods when there is little demand from developers, and these banks will need to be financed through additional property

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[7] 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 where the policy itself could be regarded as being of merit (Berger, 2003).

[8] 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 the station.

taxes or taking out commercial loans that have to be serviced. There may need to be investment in receiving areas to ensure that they have the capacity to accept greater density of development and to encourage their populations to accept the redirection of development to their communities.

TDR programs are based on the presumption that owners can develop to the maximum extent permitted and therefore must be compensated for giving up such rights. An alternative approach is that developers and owners who create externalities in the form of the destruction of common property resources or congestion should be obliged to pay for this – the polluter pays principle. Therefore permission should be sought before undertaking such activities rather than compensation being paid for refraining from them. There is evidence that some TDR schemes are not well directed towards properties and habitats that are in danger of destruction. Instead, they provide a means by which owners in the receiving area are able to access part of the equity from maximizing the value of their property without having to redevelop it, sell it, or give up living there even if development is unlikely to be pursued or may not even be viable. The policies impose costs on households seeking to live in the receiving areas or businesses seeking to locate there by raising the costs of development. This raises potentially awkward questions about the distribution of costs and benefits from TDR programs.

TDR programs depend on market mechanisms for success. There must be demand by developers in the receiving areas for the credits generated or there will be no compensation for owners who voluntarily accept restrictions on their properties in the sending areas. Periodically the property market enter into recession in which there is no demand for development. Some of the most successful schemes depend on continuing demand for certain types of development in what are unusually vibrant markets, such as Seattle, Washington DC, and New York. The programs often work by depressing the opportunities for development without using TDR credits by setting artificially low floor to area ratios below the levels that could be justified on town planning grounds. If developers find it profitable to develop at these low FAR ratios or find ways around the need for TDR credits for their developments, then this will undermine the effectiveness of TDR programs. For an emerging economy this raises questions about the quality of land governance. Two issues arise. Firstly, whether there is the capacity to manage a TDR scheme? This requires the ability to place restrictions on titles of those owners in the sending areas who accept TDRs and to monitor and enforce the terms and conditions on owners in the sending areas and developers in the receiving areas. Secondly, it means that there is the ability to prevent development in the receiving areas that is not undertaken with TDRs because ways have been found round the regulations, or because there are no effective controls over illegal building or constructing more intensively than permitted, or because of corruption or fraud.

TDR programs can be an effective means of preserving historic buildings and streetscapes and protecting farmland and vulnerable environmental areas from development. There are usually alternative ways of securing these goals. TDRs are far from being a costless policy even though they may impose lower cash costs on local government than some of the alternatives. As they are also not effective in certain conditions, emerging economies planning to introduce such a policy need to think very carefully about whether it is likely to be effective and the real costs involved, and whether the capacity and quality of land governance needed can be assured.

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