

# Land Acquisition for Infrastructure Development Through Land Trusts

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## Introduction

Land acquisition is one of the difficulties in infrastructure investment. When the construction of a road is planned, city officials have to negotiate with many landowners. This applies not only in Asia but also in Latin America and other regions. Huge amounts of time and money are needed. In Malaysia, the Ministry of Transport says that about 50% of total construction costs goes into land acquisition. In Bangladesh, some of the landowners are working in foreign countries, which often makes land purchases impossible to pursue. Japan has experienced huge problems in constructing commercial buildings and condominiums. Land trusts have been extensively used. Landowners can keep the land as their own and lease it to commercial developers and condominium developers; or they could receive one room in a condominium as their own in return for giving up of ownership of the land.

## Scheme of Land Trusts

Landowners entrust the land to a trust bank. The trust bank will be the intermediary between the landowners and the infrastructure company (or infrastructure investor), and will make sure the land is properly used and annual rent is paid to the landowner by the infrastructure company (*Chart 1*).

Many developing countries do not have trust banks, but it is possible to give a trust license to ordinary banks as long as they can establish that they can function as solidly as a trust bank.

Landowners entrust their own land to the trust bank and watch to see whether the land is properly used for infrastructure. They check the net revenues of the infrastructure entity, part of whose net revenues are returned to the landowners every year in annual rent.

Land trusts often work better than purchasing the land from landowners. Some agricultural farmers receive huge sums of money when they sell their land for infrastructure, and then purchase cars and refrigerators and so on. But the money they receive is often gone in a few years. On the other hand, land trusts give landowners an annual rent generated by the net revenues from infrastructure, such as roads, railways, water supplies and electricity, for many years, not only for their own generation but also for their children and grandchildren.

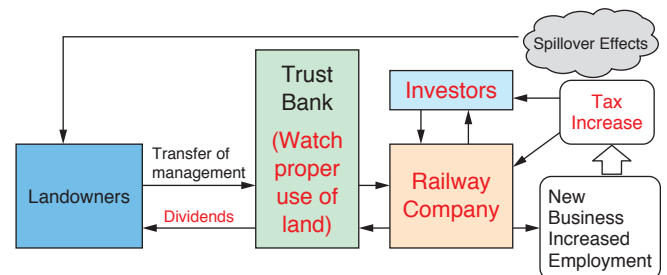
The trustee (in this case, the trust bank) must manage the trust asset by following the three rules stated below:

- I) Due care of prudent manager  
Trustee must manage the trust asset with the care of a prudent manager.
- II) Duty of loyalty  
Trustee must manage the trust asset for the beneficiary following the purpose of the trust. Trustee must not use the trust asset for the benefit of itself or a third party.
- III) Obligation to separately manage trust assets  
Trustee must manage the trust asset separately from the beneficiary's property or any other properties.

## Difficulty of Land Acquisition in Developing Countries

This section will briefly present the results of efforts undertaken by the Urban Expansion Program at the Marron Institute of New York University working with two rapidly growing cities in Colombia, helping them to make the minimal arrangements necessary to accommodate the new dwellers providing the land necessary for the city's expansion.

CHART 1  
**Land trust for infrastructure investment**



1. Reduction of costs of land purchase
2. Leasing contract
3. Future tax revenues can be used for repayment
4. Landowners keep their ownership

Source: Compiled by the authors

### Rapid growth of cities in developing countries

Rapidly growing cities in developing countries are probably the ones with the biggest need to make plans to accommodate the physical expansion that is produced as a result of population and economic growth. In this sense, the bulk of the urban population that the world expects will move to cities in developing countries. Those countries will receive 19 times more people than those in the developed world.

Intermediate cities in developing countries often have weaker institutional capacity to make arrangements that would leverage this growth for more productivity, sustainability and inclusivity for the dwellers of the city. To address this issue the Urban Expansion Program has been providing technical assistance to intermediate cities in Colombia and Ethiopia. The findings of the Atlas of Urban Expansion led by the same research team shed light on the disastrous consequences of unplanned growth – less area within walking distance of arterial roads; less share of built-up areas allocated to arterial roads; more saturated areas with less unbuilt land, just to name a few.

For this process projections were made to estimate the rate of consumption of land per person according to population projections by local authorities. These show how on average for the last 30 years cities have increased their rate of land consumption on average at 2% per annum. In other words, densities have been declining at the same rate. Contrary to traditional methodologies that advocate for smart growth predicting that cities will decrease the consumption of land per person, we project three scenarios – one where land consumption remains constant; one where land consumption per person declines at 1% per year; and the last one following the global average of a 2% yearly decline. We obtained the following results for the cities of Montería and Valledupar, located in Northern Colombia. Their urban extent will have a roughly three-fold increase, as shown in [Table 1](#).

### Locating the area needed for expansion

Next, an analysis was conducted to locate the most suitable places to allocate such growth. This was done in coordination with information available and also using vernacular knowledge of local government officials. Once the areas where expansion would occur were identified, we used the cadaster's Geodata base of the cities to identify property lines and determine boundaries and also make an

TABLE 1 (unit: ha)

City	Urban Extent 2010	Urban Extent 2040	As Multiple of 2010
Montería	3,598	10,314	2.9
Valledupar	2,474	7,696	3.1

Source: Compiled by the authors

TABLE 2 (unit: ha)

City	Area Required	Area Disrupted by Road Construction	Number of Owners
Montería	6,716	445	984
Valledupar	5,222	342	138

Source: Compiled by the authors

inventory of owners and a characterization of plot sizes. As is not surprising, the intensity of the fragmentation on the plots located on the fringe of the cities reduces as land is still sold by hectares and not by square meters. Yet the numbers of properties on the outskirts of these cities (in the cadaster's Geodata base) was rather significant. In Valledupar, we found that the 5,222 ha necessary to accommodate the expansion of the city covered some 330 plots of land. The amount of plots was much higher in Montería, about nine times as many plots as in Valledupar – namely 2,712 plots.

The plan of expansion seeks to secure rights of way for the owners of the land to be used for an arterial grid as much as possible and thus only a limited percentage of the land will be used for expansion, and for that reason only the owners of that land through which corridors actually go will be compensated for their loss of the land due to the expansion of the city. This exponentially reduced the number of owners affected by the arterial grid layout.

The area required for the corridors in Montería would be 445 ha reducing the number of landowners to 984, whereas Valledupar would require 342 ha which would reduce the number of landowners to 138. Although drastically different, both cities still present a very high number of landowners to negotiate with ([Table 2](#)).

### Price of land and municipal budget

We looked at the cadaster and market prices of the land. We were able to access the budget numbers of Valledupar. The city has a total annual spending budget of \$8.1 million. If the market cost of

purchasing the land amounts to \$1.49 million, the city would need to allocate 20% of its total annual budget just to buy land. And although this might seem easy to amortize in the long run, it is very unlikely that such a share of the budget could be allocated to that item, particularly by governments that have no possibility of reelection and that have myriad issues to address.

### Simple Comparison Between Land Purchase & Land Trust

In this section we propose an analytical framework to understand the role of a land trust in long-term development. We consider a Present Value Model (PVM) as it provides a way to relate the current price of land to the infinite streams of future earnings from holding the land. In the classical rent theory, David Ricardo, the British political economist, mentioned that land rent is the payment that the landowner receives “for the use [by himself or someone else] of the original and indestructible powers of the soil”. Although this was put in the context of agricultural use, we will extend this notion to the use of land for non-agricultural purposes (infrastructure, industrialization, etc.).

The cost of land purchase = Annual rent/discount rate

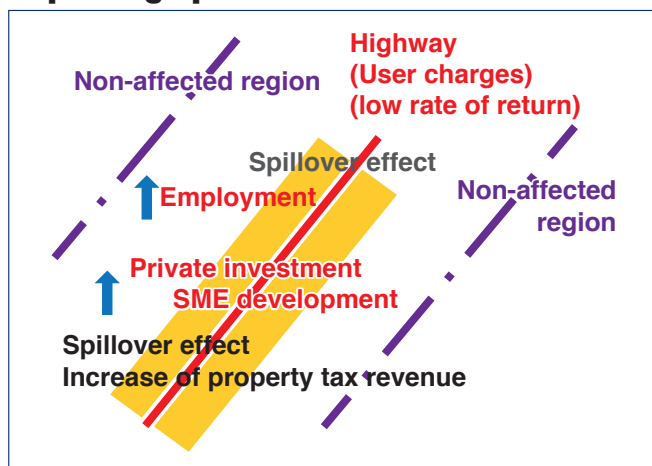
If the discount rate is 10%, the cost of the land purchase will be 1/10 of annual rent which will be paid to landowners. Infrastructure companies do not have to prepare a huge amount of money at the time of construction. The annual rent can be created by annual revenues received by infrastructure companies which will reduce the initial cost that should have been paid to the landowner for its purchase.

### Infrastructure Investment & Spillover Tax Revenue

Traditionally, infrastructure investors used to receive only user charges received from infrastructure investment. However, in this paper we propose to utilize the spillover tax revenue generated from an infrastructure project to reduce the cost of infrastructure investment. In *Financing Infrastructure in Asia and the Pacific: Capturing Impacts and New Sources* (Asian Development Bank Institute, 2017), Naoyuki Yoshino, Matthias Helble and Umid

CHART 2

### Expansion of infrastructure investment: capturing spillover tax revenues



Source: (Yoshino, Helble and Abidhadjaev, 2017), Asian Development Bank Institute

Abidhadjaev argue that infrastructure projects can generate spillover effects through an increase in property tax, corporate tax, income tax etc. which can also be used as an incentive for private landholders. As demonstrated in *Chart 2*, the area highlighted in yellow gains from a newly built highway (as shown by the red line). This positive spillover effect is possible if this new highway generates more employment through an increase in private business and private investment along both sides of the highway.

In macro estimation, Yoshino and Masaki Nakahigashi used a trans-log production function in Japan to estimate the direct effect of infrastructure investment and spillover effects (“The Role of Infrastructure in Economic Development”, *ICFAI Journal of Managerial Economics* 2, 2004). The direct effect of infrastructure investment is created by the construction of infrastructure that will increase the output of the region. Spillover effects will have two channels. One is that water supply and electricity will prompt the construction of new office buildings and new housing, which will increase the efficient use of land. New roads will invite manufacturing industries along them. The second channel is to increase employment in the region – namely, infrastructure such as water supplies, railways and roads which will attract businesses,

restaurants and new residents into the region. New businesses will bring new employment to the region, which will contribute to increases of consumption and housing starts. GDP in the region will further increase.

Yoshino and Nakahigashi estimated the direct effect of infrastructure investment and its spillover effects by the use of macro data of Japan. In the high growth period of Japan, the direct effect of infrastructure investment that increased output was 0.696 estimated by use of the trans-log production function. The spillover effect of increasing output induced by an increase of private capital was 0.452. Infrastructure can invite private businesses to the region. The possible spillover effect of the output increase from new employment created by infrastructure projects was 1.071 in the period of 1956-1960. New shopping malls and restaurants will open which will increase employment along with new infrastructure. The biggest spillover effect was to increase employment, which contributed to an increase in output (Table 3).

These increases of output created by spillover effects will increase tax revenues whose average rate is 20% in Japan  $\{0.305=(0.452+1.071) \$10.20\}$ . If 50% of the increased tax revenues were returned to investors in infrastructure, it would have increased the rate of return by 21.9%  $(=(0.305 \times 1/2)/0.696)$ . These significant increases of rate of return would have attracted private investors into infrastructure investment. In the past, all these increased tax revenues were taken by the government and were not returned to investors in infrastructure. Investors in infrastructure only relied on

user changes such as highway tolls, train tickets, water tariffs, etc.

## Land Trust Law in Japan

In Japan, trust business can only be carried out by entities licensed under the Trust Business Act (Act No. 154 of 2004, as amended) and financial institutions licensed under the Act for Financial Institutions' Trust Business (Act No. 43 of 1943, as amended). Until the early 1990s, trust business was monopolized by eight financial institutions, of which seven were known as trust banks. Following the reform of the financial system in recent years, today over 200 financial institutions and entities are licensed to carry out trust business in Japan. The trust business can be handled not only by trust banks but also by ordinary banks which obtain a trust license.

## Efficiency Gains from Land Trust Policy

Recent political upheavals resulting from the industrialization drive through forcible land-grabs in many parts of Asia (India, Indonesia, Nepal, and the Philippines) point to the need for a sustainable policy – a framework that results in a positive sum game, benefiting landowners without hurting growth prospects. We propose land trusts or land leases for the development of infrastructure investment and industrialization purposes. It will ease negotiations between landowners and infrastructure companies. Further, the cost of land purchases will be drastically reduced by the annual rent paid to landowners. Thailand has passed a new law that will make land trusts possible in Thailand, in effect from Nov. 1, 2019. If similar laws can be established, land trusts can be used in many other countries, which will make various infrastructure investment possible for their sustainable growth.

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TABLE 3

### Macroeconomic effect of infrastructure investment

Spillover Effects Estimated from a Macroeconomic Trans-log Production Function				
	1956-60	1961-65	2001-05	2006-10
Direct effect (kg)	0.696	0.737	0.114	0.108
Indirect effect (Kp)	0.452	0.557	0.091	0.085
Indirect effect (L)	1.071	0.973	0.132	0.125
20% returned	0.305	0.306	0.045	0.042
Increment	43.8%	41.5%	39.0%	39.1%

Source: Yoshino and Nakahigashi (2016)

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