



**ADB Working Paper Series**

**LAND USE MANAGEMENT STRATEGIES  
FOR EQUITABLE INFRASTRUCTURE  
AND URBAN DEVELOPMENT:  
OVERVIEW OF STRATEGIES AND TOOLS**

Erwin van der Krabben,  
Piyush Tiwari, and Jyoti Shukla

No. 1191  
October 2020

**Asian Development Bank Institute**

Erwin van der Krabben is a professor of planning at Radboud University, The Netherlands. Piyush Tiwari is a professor of property at the University of Melbourne, Australia. Jyoti Shukla is a lecturer in property at the University of Melbourne, Australia.

The views expressed in this paper are the views of the author and do not necessarily reflect the views or policies of ADBI, ADB, its Board of Directors, or the governments they represent. ADBI does not guarantee the accuracy of the data included in this paper and accepts no responsibility for any consequences of their use. Terminology used may not necessarily be consistent with ADB official terms.

Working papers are subject to formal revision and correction before they are finalized and considered published.

The Working Paper series is a continuation of the formerly named Discussion Paper series; the numbering of the papers continued without interruption or change. ADBI's working papers reflect initial ideas on a topic and are posted online for discussion. Some working papers may develop into other forms of publication.

The Asian Development refers to "China" as the People's Republic of China, and to "Hong Kong" as Hong Kong, China.

Suggested citation:

Van der Krabben, E., P. Tiwari, and J. Shukla. 2020. Land Use Management Strategies for Equitable Infrastructure and Urban Development: Overview of Strategies and Tools. ADBI Working Paper 1191. Tokyo: Asian Development Bank Institute. Available: <https://www.adb.org/publications/land-use-management-strategies-equitable-infrastructure-urban-development>

Please contact the authors for information about this paper.

Email: [e.vanderkrabben@fm.ru.nl](mailto:e.vanderkrabben@fm.ru.nl), [piyush.tiwari@unimelb.edu.au](mailto:piyush.tiwari@unimelb.edu.au),  
[jyoti.shukla@unimelb.edu.au](mailto:jyoti.shukla@unimelb.edu.au)

Asian Development Bank Institute  
Kasumigaseki Building, 8th Floor  
3-2-5 Kasumigaseki, Chiyoda-ku  
Tokyo 100-6008, Japan

Tel: +81-3-3593-5500  
Fax: +81-3-3593-5571  
URL: [www.adbi.org](http://www.adbi.org)  
E-mail: [info@adbi.org](mailto:info@adbi.org)

© 2020 Asian Development Bank Institute

**Abstract**

In the absence of concise conceptualization of planning and land use management strategies, the scope of their discussion in literature has been wide, with different nomenclature for almost similar concepts. This paper attempts to provide an overview of the models and tools used for land management by grouping these models and tools, known by different names across disciplines and countries, along a primarily urban or periurban development continuum. The objective is to streamline the discussion on land management strategies on the basis of principles on which models and tools are based rather than their nomenclature.

**Keywords:** land use, land markets, eminent domain

**JEL Classification:** R330, K110, Q150

# Contents

1.	INTRODUCTION.....	1
2.	OVERVIEW OF LAND MANAGEMENT STRATEGIES .....	2
3.	PARTIAL LAND MANAGEMENT STRATEGIES .....	4
3.1	Compulsory Public Acquisition of Land.....	4
3.2	Strategic Public or Private Land Banking.....	7
3.3	Pre-Emption (or Right of First Refusal) .....	8
3.4	Graduated Density Zoning.....	9
3.5	Land Bonds .....	10
3.6	Value Capture Instruments.....	10
3.7	Inclusionary Zoning.....	11
3.8	Land for Infrastructure Models.....	11
3.9	Establishment of Markets for Transferable Development Rights .....	12
3.10	Public Land Lease Systems .....	12
4.	COMPREHENSIVE LAND MANAGEMENT STRATEGIES .....	12
4.1	Private Market Land Management Strategy.....	13
4.2	Public Comprehensive Land Banking Model .....	13
4.3	Collaborative Private-private Land Management Model.....	14
5.	CONCLUSION .....	20
	REFERENCES .....	21

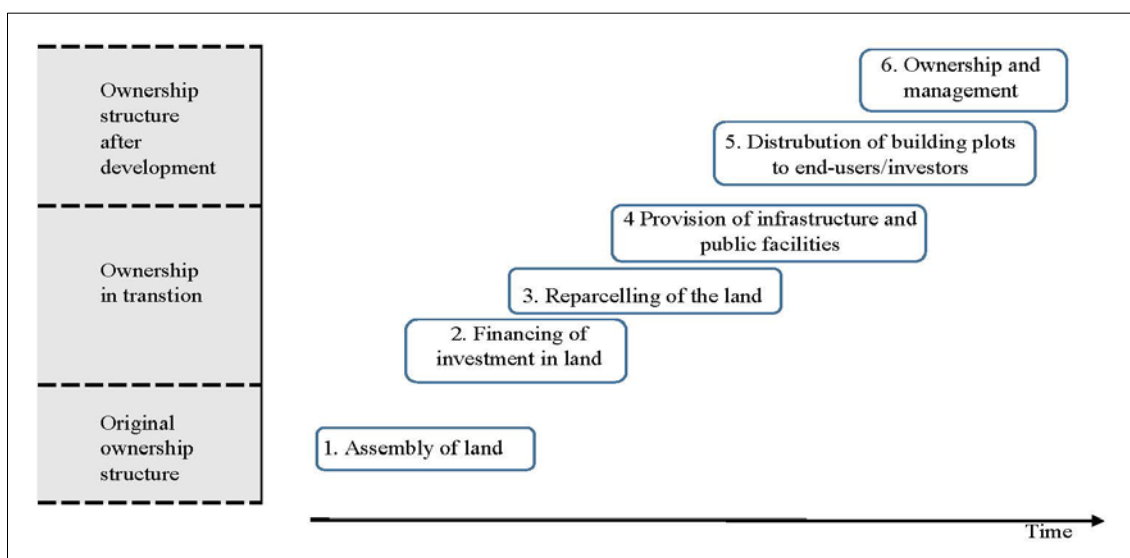
# 1. INTRODUCTION

To enable a proposed urban development, including its attendant infrastructure and feeder transportation, one needs to possess at least the user rights over the land on which the development is supposed to take place. That urban development can be a brownfield or greenfield development, and it may consist of, for instance, infrastructure, residential, commercial, industrial, redevelopment or mixed-use development. Depending on the scale of the development and the present ownership structure, the promoter-sponsor-developer (be it public, private, or some combination) must acquire one or more plots in a process that is called land assembly. After land assembly, further steps must be taken to make the location suitable for development. We refer to that whole process as part of the administration function of land management.

Land management is a much broader term which, according to the United Nations Economic Commission for Europe (1996) comprises the process by which natural and built resources of land are put into good effect. Enemark (2005) defines a land management paradigm which includes land policies, land administration functions, and a land information system. Land administration functions, which are the operational part of land management, ensure proper management of land tenure, land value, land use, and its planning and development. The administration functions of land operate within the land policies and are facilitated by the information system (Enemark 2005). Land development is the strategic part of land administration that constitutes a series of steps that are taken to achieve long-term goals. For the rest of the discussion, we refer to the strategic part of land administration as the land management strategy.

A land management strategy for urban development usually encompasses the assembly of land (through securing and transferring land rights), financing of the investment in buying or leasing land, reparcelling of that land into a new grid to make it suitable for the proposed development, the provision of infrastructure and other public facilities, distribution of building plots to end-users and/or investors (that want to buy the land to build on), and the management and ownership of (part of) that land after the construction of the building(s) (Figure 1).

**Figure 1: Land Management Strategy for Urban Development**



Source: Authors.

Although (public) land management strategies are often part of a more comprehensive planning process and the (private) development of land also often makes up part of integrated land and real estate development projects, it is still useful to consider the land management strategy separately from the broader planning process and real estate development. There are at least four good reasons to do so.

First, land markets must be considered as markets with their own characteristics and price mechanism (as separate from the real estate market, which requires land as an input for property development, while there are other uses of land that do not require building on it, such as agriculture or mining or parks). A land management strategy should enable public and private stakeholders to act in the market in an efficient way. Second, but closely related to the first argument—public (and private) stakeholders in most countries have developed policies and tools aimed at the land market. A land management strategy can be regarded as the operationalization of a land policy and should provide the framework for the use of land policy rules and guidelines. Third, the assembly of land that rezones or reassigns property rights interferes with existing individual property rights over land and raises many legal debates over, for instance, expropriation, the protection of individual property rights, and compensation that must be paid for the compulsory acquisition of land. Fourth, since David Ricardo introduced his theory on land rent (Ricardo 1817) and Henry George published his famous work *Progress and Poverty*, in which he argued in favor of the nationalization of land (George 1881), political debates have questioned the so-called unearned increment in land values due to government interventions. Land policy in most countries is influenced by that debate and is often used as an instrument to cream off part of that unearned increment.

This paper does not aim to go into the details of these different debates and arguments, but has a more modest and pragmatic objective, namely to provide an international, state-of-the-art overview of land management strategies used by local governments (and private stakeholders) in countries around the world aiming for an efficient and fair urban development process. Though we do refer to literature that critically reviews the working of these models, we do not have the intention to evaluate (the outcomes of) the models in terms of, for instance, effectiveness, efficiency, and/or social equity. This paper in particular wants to present the characteristics of each of these models and distinguish them from each other. This also implies that the paper is concerned only with the land management strategies that are used for infrastructure, public spaces, and urban development projects, and a complete study of land management is out of the scope.<sup>1</sup>

## 2. OVERVIEW OF LAND MANAGEMENT STRATEGIES

The overview of land management strategies in this paper is mainly based on a literature review, discussions in the ADBI seminar on land management in Asia (Tokyo, December 2018), and the authors' personal expertise. Land management strategies have not been conceptualized concisely in literature and the scope differs between countries and disciplines (Louw 2008). Some studies use the term 'land assembly' to indicate the entire process of making land available for urban development. Golland (2003), for instance, defines land assembly as the acquisition of land; land preparation; planning of the built form, streets, open spaces, and main services; sub-division of land

---

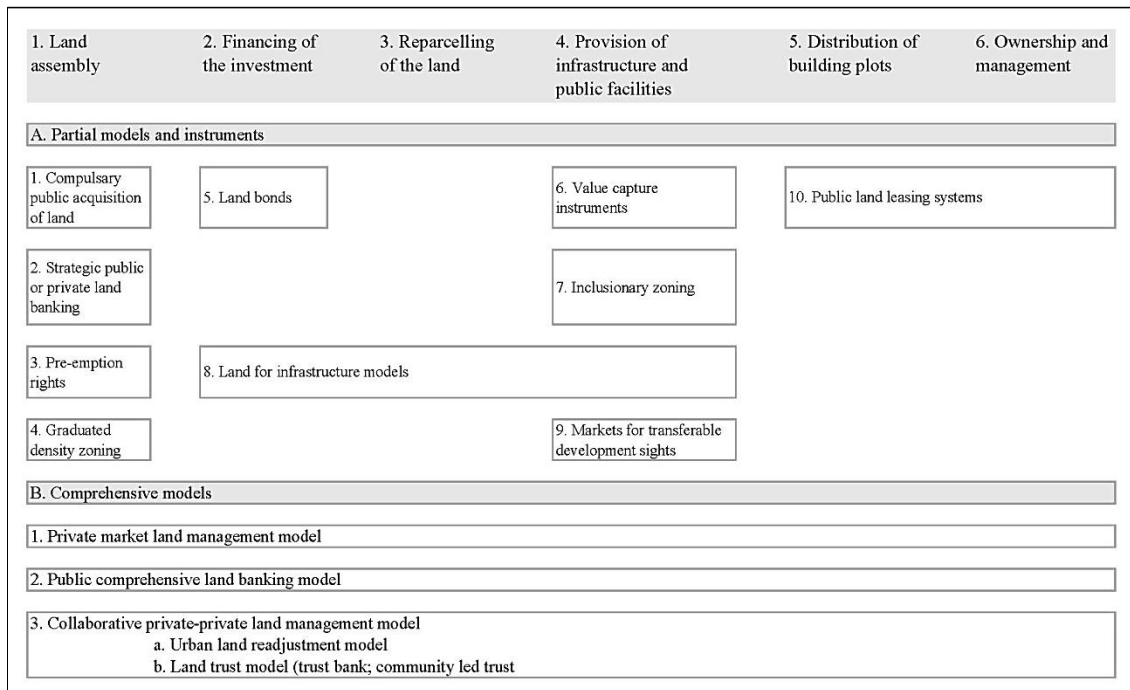
<sup>1</sup> Land management for urban and periurban development obviously affects rural land markets as well, when former rural land is turned into urban. However, the paper's focus is on the strategies and instruments to make land available for urban development (buildings, infrastructure, green space).

for buildings; and delivery of the planned form. According to Louw (2008, p. 70) a crucial aspect of land assembly encompasses changes in land ownership by acquiring required land parcels to facilitate property development and infrastructure provisions. Therefore land assembly is considered as a specific stage in the property development process. In line with van der Krabben and Jacobs (2013), we prefer to speak of land management strategies.

According to van der Krabben and Jacobs (2013, p. 775), land management strategies have three objectives. Firstly, land must be made available for a proposed and desired (or mandated by government) development. Changes in the social and economic conditions over time necessitate urban redevelopment, as the landownership that currently exists is a response to past requirements (Louw 2008, p. 70). Landowners themselves may not undertake redevelopment or co-operate with it due to various constraints that they face or a preference for the status quo. Such situations require a form of land assembly—land transfers from passive to active ownership. Second, a land management strategy requires that the costs of the public works are fully or partially recovered. This could be achieved through a positive balance between the value increment from new development and the costs incurred in development. A third main objective, though politically contentious (Alterman 2009), is to capture part of the unearned increment in the land value resulting from the change in land use in the development area and to use it for public purposes. We may add here a fourth objective, namely to offer an instrument to (re)distribute land-based wealth in a fair way amongst landowners, land users, property developers and investors, and the public.

To achieve these objectives, different land management strategies can be applied. We distinguish between partial land management strategies and a comprehensive land management strategy (Figure 2). Partial land management strategies deal with certain aspects of a land management strategy, while comprehensive models offer an inclusive approach covering all aspects of the process of land management. We are aware that the division that we make here is artificial to a certain extent, since the tools and instruments that are being discussed here as partial land management strategies often are part of the comprehensive land management strategies as well. Nevertheless, we think that the distinction is useful: it follows the academic literature on land policy; moreover, it relates to current policy debates in some countries on how inclusive or comprehensive land management strategies should be.

The (potential) use of the strategies and the (legal) tools and instruments are obviously contextually defined. In countries where land is state owned, land management strategies follow a completely different path from countries with private ownership of land. The strategy also depends on whether the process is participative (involving landowners) or non-participative, as discussed by Shukla (2020). The use of certain legal instruments and tools is constrained by planning and land laws. Institutional capacity problems may weaken local governments' positions in relation to land markets. In some countries, investment strategies for local governments in land markets are legally restricted. Finally, local land and real estate market conditions influence the effectiveness of both public and private sector land management strategies (respectively, for instance, in terms of scarcity of land, market power by big developers, and land prices, and in terms of real estate prices, vacancy rates, and demand for real estate). The overview of land management strategies in this paper, however, does not take these context-related variations into consideration.

**Figure 2: Land Management Strategies and Tools**

Source: Authors.

### 3. PARTIAL LAND MANAGEMENT STRATEGIES

Possibly the most commonly applied development strategy for urban development is the situation in which a private real estate developer or end user is in charge of (or has been commissioned to) a real estate development, from land acquisition to completion of the buildings, after which the public space that is part of the development is often transferred to a public authority. Local governments may decide to support this strategy with a variety of partial land management strategies and instruments.

Based on the literature, we distinguish ten types of partial land management strategy: 1) compulsory public acquisition of land; 2) strategic public or private land banking; 3) pre-emption rights; 4) graduated density zoning; 5) land bonds; 6) value capture instruments; 7) inclusionary zoning; 8) land for infrastructure models; 9) the establishment of markets for transferable development rights; and 10) public land lease systems.

#### 3.1 Compulsory Public Acquisition of Land

Land transfer from passive to active ownership sometimes requires compulsory public acquisition of land (also referred to as eminent domain, compulsory purchase, eviction, expropriation, or resumption). Compulsory acquisition is simply defined as the power of the sovereign to compulsorily acquire private land for public purposes such as building dams, roads, railways, hospitals, schools, and other public infrastructure. The most popular justification for the grant and exercise of this power to and by the government has been social welfare maximization (Benson 2008). There is a strong argument to support that individuals' rights to property should give way to the social function of the property (Heller 2000) and priority should be given to the cumulative welfare of the society at large, over and above the personal interests of the affected landowners



(Hong 2007). Of course, it would be more efficient and less confrontational if, in original planning, certain plots or easements (slivers of land for rights of way expansion that cannot be built over outstanding subterranean sewerage or services) for public building purposes could be reserved, as was done for school zones or public squares in the United States in 18th and 19th centuries.

There is a large body of literature related to the topic. Some of that literature discusses legal aspects, particularly the conditions under which local governments are authorized to make use of compulsory public acquisition of land (Stoebuck 1972; Munch 1976; Sagalyn et al. 2007; Jacobs 2008) and social conflicts arising from governments' use of expropriation powers (Guo 2001; Cohen 2005; Labbé 2011). While compulsory acquisition in most countries concerns both ownership and user rights, in countries with state ownership of land (e.g., People's Republic of China, Viet Nam), the acquisition concerns the user rights only. Other literature discusses the compensation that must be paid to the landowners when their land has been expropriated by the state (Miceli 1991; Zuhui and Hui 2002; Sluysmans et al. 2015; Holzmann-Gazit 2007). What is considered *just* compensation differs largely amongst countries, ranging from compensation for the loss of the land based on the value of its original use to full compensation based on the economic value of the land (which may be influenced by expectations of a planned change in land use) and loss of income. We can at a minimum agree with the settled international law standard of prompt, adequate, equitable, and effective compensation in the broadest terms (though whether these are fully meaningful concepts for original owners' and indigenous peoples' relationship to the land is another question entirely and is a dominant theme taken up in other parts of this book).

Price (2020) explains the impact of the history of property institutions on the constitutional status of private property rights in a country and the level of involvement of the original owners in land procurement processes, which is almost absent in the compulsory acquisition process. He also explains how British and American roots in liberalism and individualism have created strong reliance on the coercive mechanism of compulsory acquisition. Allen (2000) writes at length on the widespread adoption of compulsory acquisition practices across commonwealth countries with a colonial history and strong borrowing from English land laws. Laws of land and compulsory acquisition in England have a very long history and are highly complex, involving legislation and case law (Cox 2018). In the United States, compulsory acquisition is viewed as an attribute of sovereignty and does not require special legislation (Sullivan 2018). That said, there is special legislation in place to define the limits of use of this power (Sullivan 2018). The Australian legislation does not mandate that compulsory acquisition be associated with public benefits, but the power is generally exercised for the same (Searle 2018). There is a growing trend across a number of countries toward more exceptional use of compulsory acquisition and/or more favorable treatment of landowners (Searle 2018). Searle (2018) explains that when the legislation does not mandate public purpose for compulsory acquisition of land, as observed in America and Australia, then the underlying objective of social welfare maximization is put at risk, and assessment of whether the benefits of compulsory acquisition outweigh the costs is left to the courts to determine on a case-by-case basis.

Use of compulsory acquisition is less popular in countries that have communitarian roots and recognize the social function of private property, such as in Germany; the Netherlands; Singapore; and Hong Kong, China. Alternative methods of land procurement such as land pooling and other cooperative models are more popular in these countries, which have limitations (be they legal or customary) on recourse to compulsory acquisition. For example, in Germany, there are strict constitutional

requirements of the use of expropriation, thus limiting its use and entailing considerable effort and legal risks (Albrecht 2018), while Japan has avoided relying on its powers through cultural caution and historical controversies (Stillman and Bharule 2020, Box 25.3, p. 504).

Holtslag-Broekhof et al. (2018) explain the hierarchy of land procurement instruments used in the Netherlands based on their impact on private property rights. Given the emphasis on collaborative planning practices, the Dutch system positions compulsory acquisition at the bottom of the hierarchy as the least preferred option, because of its high negative impact on private property rights, strong interventionist approach, and high procedural costs (Holtslag-Broekhof et al. 2018). At the top of the hierarchy are those instruments which rely on the willful participation of the original landowners, such as voluntary land readjustment and voluntary land acquisition. Between the two extremes of voluntary and coercive instruments are intermediate methods of pre-emption and land consolidation (see section 3.3 below) (Holtslag-Broekhof et al. 2018).

In Singapore, “land can be acquired for any public purpose by any person, corporation or statutory board, for any work or an undertaking which, in the opinion of the Minister, is of public benefit or of public utility or in the public interest; or for any residential, commercial or industrial purposes, the President may, by notification published in the Gazette, declare the land to be required for the purpose specified in the notification” (Christudason 2018, p. 127-128). The government is the deciding body on what is to be considered a public purpose, and in section 5(3), a declaration by the President is conclusive that land is required for such a purpose. The process of compulsory acquisition is finally implemented by the Singapore Land Authority (SLA).

In Hong Kong, China, freehold interest in all land is owned by the government, which assigns leasehold interest in the form of private property rights (Hastings and Adams 2005). The power of compulsory acquisition of private property is allowed under resumption rights of the Crown and/or specific ordinances of government and statutory authorities to acquire land for public purposes (Ng 2002). On resumption of property, the leaseholder is offered monetary compensation that is calculated using a definitive formula. There is also the possibility of a reverse compulsory acquisition to be initiated by the leaseholder under certain circumstances when the property is blighted or reduced in value or use due to a change in zoning, planning regulations, and other actions by the government. The leaseholder may appeal to the Chief Executive-in-Council to acquire the property on payment of compensation.

For properties with multiple owners, these rights are equally accessible to all co-owners who hold an undivided share in the property. Regarding the compulsory acquisition of properties under multiple ownership, the Land (compulsory sale for redevelopment) Ordinance Cap 545 was mooted in 1999 to facilitate land assembly by the private sector. The objective was to overcome constraints in assembling land under the system of common property ownership by allowing “the majority owner” of the undivided shares in a lot to make an application to the Lands Tribunal for an order of sale of all the undivided shares. Subject to the satisfaction of all necessary conditions in the Ordinance, the property can be publicly auctioned and the proceeds divided proportionately among the co-owners. Amidst existing controversies over subsequent disposal of compulsorily acquired land by public agencies to private developers, the institutional arrangement under the Land (compulsory sale for redevelopment) Ordinance that facilitates private compulsory acquisitions has further invited resistance from the landowners (Hastings and Adams 2005).

### 3.2 Strategic Public or Private Land Banking

While only a few countries make use of what we refer to as public comprehensive land banking strategies (see section 4.2 below), the use of strategic public land banking is a much more common phenomenon.

In the words of Alexander (2005), a land bank is an entity that assembles and banks land for short- or long-term strategic purposes. Public land banking is the mechanism for the government to assemble land parcels, usually on the periphery of an urban center, with a view to developing or selling them for development at a future date (Stoebuck 1986). These developments may range from creating new towns to renewal of degenerated inner-city suburbs, and construction of large irrigation projects, future parks, or public buildings (Alexander 2005). In view of Fishman and Gross (1972, cited in Alexander 2005, p.143), public land banks are public bodies that acquire land in future urban growth areas to protect it from unplanned speculative development. Such interventions are necessary to regulate the pace and direction of growth (Fishman and Gross 1972). Depending on the laws that govern them or the jurisdictions that establish them, land banks differ in the kinds of properties that they hold. Despite these differences, one thing that is usually common among land banks is their focus of abandoned or vacant properties (van der Krabben and Jacobs 2013).

The concept of land banking emerged in the United States as a planning instrument in the latter part of the 20th century to create municipal land reserves for short- and long-term control over urban planning. The earliest program was introduced in 1971 by the St. Louis Land Reutilization Authority (the St. Louis Land Bank), and by 2004 it was expanded to four other metropolitan areas of Cleveland, Louisville, Atlanta, and Flint (Alexander 2005).

During the 1950s and 1960s, urban areas were sprawling in an unregulated fashion, and inner-city suburbs were declining (Alexander 2005). There was a need for the local government to take control of land, check urban sprawl, and regenerate inner cities (Alexander 2005). The concept of land banking was proposed with the intention of creating large-scale land assemblies that can facilitate these objectives. Over the years, the close relationship between urban sprawl and regeneration of inner-city neighborhoods became evident, and the use of land banking was narrowed down to assembling vacant, abandoned, and usually tax-delinquent parcels of land in the inner city for urban redevelopment opportunities in the future (Alexander 2005). The underlying principle of the contemporary land banking model is that blighted properties in urban areas that are not reclaimed and redeveloped by market forces should be redeveloped and converted into assets for the community.

Land banking as a land use planning tool can be used to shape and control the development of suburban communities. Land banking requires occasional exercise of powers of eminent domain and is therefore implemented by either a government agency or a corporation chartered by the government (Alexander 2005). Given the differences in the socio-economic configuration of cities which require contextual solutions, land banks vary significantly in their legal (and departmental) structure and function. Thus, land banks are government entities which have no fixed form or function. This has also caused legal problems for the courts, which have reluctantly accepted the 'public purpose' of large-scale land banking for community development (Stoebuck 1986). In summary, despite attracting the attention of planners at inception, land banking has failed to gain wider acceptance in the United States for reasons found in the realms of public opinion, politics, and economics (see further information, see Stoebuck 1986).

Outside the United States, land banking has been used in Canada in the provinces of Alberta and Saskatchewan. Large-scale land banking programs have also been implemented in Australia; Denmark; Germany; the United Kingdom; Hong Kong, China; Israel; the Netherlands; Norway; Finland; and Sweden. In the Netherlands, Finland, and Sweden, land banking is a successful strategy that has grown over the years, with an increasing amount of land under government possession (Valtonen, Falkenbach, and van der Krabben 2017). The bank acquires land by negotiation or, if necessary, compulsory purchase. In the Netherlands, land banking is usually part of a public comprehensive land banking model, with a broader purpose than just the banking of land (see section 4.3 below). Usually, land is disposed of through outright sale, but in some cases long-term leasing is preferred. Linking the discussion back to Price (2020), land banking resonates with the communitarian ideology of public ownership of resources which is well understood by the Dutch and Swedish polity and society, and is contrary to American liberalism and individualism (Stoebuck 1986).

It is understandable that land banking requires the upfront cost of land to be incurred by the government. However, with the increase in value of the land during the holding period, significant profits can be made through the sale of land for market-intensive uses, and that can cause the original, less sophisticated landholders to lose trust in the integrity of the process, especially in developing countries with corruption and conflict of interest challenges. This opportunity to make profit from land sales may at times contradict the social welfare objectives of the government. “Considering the costs and benefits of land banking to all of society, the question of whether, in strictly economic terms, benefits would exceed costs is unclear” (Stoebuck 1986, p. 606). To counteract this, in the Netherlands, the profits made from land sales are generally used to cover costs of public amenities and to subsidize other loss-making development projects (see section 4.3 below).

Apart from public land banking, strategic or speculative land acquisitions or land grabbing by private sector companies is a common phenomenon in most countries around the world due to the specific nature of land markets. Huge gains may arise through the rezoning of land, which may be legitimate and transparent or corruptly decided, as well as the construction of new infrastructure and improved accessibility. Though strategic land acquisitions can be a smart investment strategy from the perspective of a real estate developer who wants to use that land in the future for urban development, most literature addresses the problems caused by speculative private sector acquisitions and land grabbing. While the major part of that literature refers to land grabbing problems in the Global South (Firmans 2000, 2004; von Braun and Meinzen-Dick 2009; Hall et al. 2011; McCarthy et al. 2012; McMichael 2012; Shatkin 2016; Steel et al. 2017), speculative land acquisitions and corrupt planning and land use management cause problems in other parts of the developed world as well (see, for example, Adams and Tiesdell 2012; and, most recently, LA city Planning and Land Use Management indictments in July 2020).

### **3.3 Pre-Emption (or Right of First Refusal)**

Pre-emption is the right that the landowner gives the state or local government to buy property first at the market value before other parties (Zevenbergen, Ferlan, and Mattason 2007). It comprises a formal instrument that entitles the public authority to the first option to buy a property under certain conditions (Holtslag-Broekhof, Hartmann, and Spit 2018). In the Netherlands, the Municipal Pre-emption Right Act (WVG) gives the municipality the right to declare its interest in areas proposed for urban renewal and expansion (Zevenbergen, Ferlan, and Mattason 2007). As and when the owner is

ready to sell land over which municipal pre-emption has been imposed, the land is first offered to the municipality (Zevenbergen, Ferlan, and Mattason 2007). The market value at which the municipality would purchase land is determined using same rules as in expropriation law (Zevenbergen, Ferlan, and Mattason 2007). Based on the estimated price, the municipality may decide either to buy the land or decline the sale. Also, the owner has the choice of either accepting the estimated price or deciding not to sell at all. No appeal is possible for negotiation on price. If the municipality decides not to buy the property, the owner is free to sell in the open market within the next three years. These rights are registrable in the Netherlands and are used to ensure that public interests are protected (Zevenbergen, Ferlan, and Mattason 2007). Pre-emption rights are prevalent in other countries as well. In France, certain zones identified for future development by the government are declared Zones d'Aménagement Différé (zones of deferred development) (World Bank 2020). In these zones, the government has the right of first refusal for any land transaction within a set timeframe. As a process, property owners who want to sell their land are required to declare their intent to sell. Within a set time frame (usually around two months), the government will either accept the owner's requested price or, in the case of a dispute over price, agree to a negotiated settlement. Alternatively, the government may approach the court to determine price, which is set at the market rate two years before the declaration of the right of pre-emption. This instrument enables the government to avoid the kind of land speculation that may follow notification on changes to the urban development plans (World Bank, 2020). Pre-emption rights were used in the US alongside settlers' rights to purchase public land. These have been part of the Land Act 1804, the Desert Act, and the Homestead Act in the US. In Australia, pre-emption rights are not imposed by statute, though, as a matter of contract law, parties can grant pre-emptive rights or first rights of refusal in relation to the sale of real estate. The use of pre-emption rights called *shu'fa* is prevalent, and it provides a right of first refusal over the sale of a given land or property to its direct neighbors.

### 3.4 Graduated Density Zoning

Often it is difficult to encourage redevelopment at a higher density within the city due to challenges involved in assembling land from multiple small landowners and the typical problem of holdout. Shoup's (2008) model of land assembling relies on voluntary assembly of land by the original owners through zoning incentives. For example, if a city needs to increase density around a rail transit line, it may adopt the strategy of allowing, say, a multifamily housing development of up to 50 units on all plots greater than one acre. If the value of land for 50 units significantly exceeds the existing value, there is a strong incentive for landowners to come together voluntarily and pool land to at least an acre and allow redevelopment. Shoup (2008) further explains that if graduated density zoning is applied to an area that is large enough to allow multiple collections of owners whose assembled land would trigger high density development, the competition among landowners would reduce the power of holdout and induce the fear of being left out. That said, graduated density zoning cannot fully eliminate the incentive to hold out, which would result in isolated sites that cannot be combined with other contiguous parcels. Nevertheless, cooperation among the original owners combined with competition among developers may shift and improve capital gains for the original owners.

The model has been practically executed in Simi Valley, a suburb of Los Angeles (Shoup 2008). The condition of having at least 13 acres of land for high density development in Simi Valley increased the incentive for the original owners to assemble and develop land voluntarily. As observed in this project, graduated density zoning

demotivates strategic holdouts, thus increasing the probability of a redevelopment that generates returns for the original owners, developers, and cities (Shoup 2008).

### 3.5 Land Bonds

Land bonds are financial bonds used by municipalities in many countries to provide funding for investment in the acquisition of land for (future) urban development (Temel 2001; Cullingworth 1994). Municipal land or infrastructure bonds are considered by many as attractive financing constructs for developing countries in Asia (Leigland and Thomas 1997; Platz 2009). Rehabilitation bonds are constantly evolving in the United States, particularly in California and other areas with large redevelopment needs (see Yoshino and Stillman 2017).

### 3.6 Value Capture Instruments

Land value capture refers to the ‘creaming off’ of increases in land value by a public body from the landowner, where the increased land value is the result of rezoning the land or public infrastructure provision. A large body of literature discusses the legal right of a state body to take part of the landowner’s development gain and use it for public purposes (for an overview of that literature, see Alterman 2012; Muñoz-Gielen and van der Krabben 2019). Perhaps the most documented dispute over taxing land value increase took place in the 1940s in the United Kingdom after publication of the Uthwatt report in 1942. The Uthwatt Committee discussed, among other things, the introduction of a betterment levy to capture the planning gain. A 100% betterment levy was introduced in the 1947 Town and Country Planning Act, and any development required a payment to the Central Land Board. Sale of land in private ownership to developers attracted a levy. However, the political controversy about the new regulation became clear soon after when the subsequent Conservative government immediately decided to abolish it in the 1954 Planning Act (Muñoz-Gielen and van der Krabben 2019).

Other literature discusses the instruments that can be used for land value capture (for an overview of that literature, see Alterman 2012; Muñoz-Gielen and van der Krabben 2019). An often-made distinction is between direct and indirect value capture mechanisms. According to Alterman (2009, p. 199):

Direct value capture mechanisms refer to an increase in the value of land of private owners through actions undertaken by public authorities or by the general community. The rationale for value capture is thus the fact that the increase in value was not caused personally by an individual and hence should be shared with a broader community.

A classic example would be where services are supplied to an off-grid rural or periurban property, such as sewer pipes, and the homeowner readily pays the local government a contribution toward the costs of the connection to the mains and its ongoing maintenance by way of a sewer betterment fee or charge, as it replaces the old septic tank and the chore of having it emptied. Often, however, the betterment is not compensated or charged to the benefitting homeowners, such as where a new stop for a train or bus line is added, increasing access to the private property.

These types of direct value capture mechanisms are often referred to as betterments, (unearned) increments, or windfalls. Based on an international review of value capture mechanisms, Muñoz-Gielen and van der Krabben (2019, p.6) claim that indirect value capture instruments are now more commonly used: “(n)ext to proposals of land value

capture based on a direct rationale (the community is the rightful owner of all or part of the increased value and should therefore capture it), other proposals have come forward that are based on different, ‘indirect’ rationales, of which the internalization of negative externalities of urban development is the most common one. These proposals do not challenge fundamental ideological principles and do not always require a detailed regulation, which make them easier to introduce”. Typical examples of indirect value capture instruments include developer obligations, infrastructure levies, impact fees, and agreements with developers, often to supply public goods and services, such as playgrounds, greenbelts, or low-rent, affordable housing (see below).

### **3.7 Inclusionary Zoning**

Inclusionary zoning, also known as inclusionary housing, can be considered as a special kind of value capture mechanism. Alongside ‘regular’ zoning ordinances, there are inclusionary zoning programs which require private developers who undertake residential development to contribute a portion of their units toward affordable housing for those who are crowded out in the upscaling residential market (Calavita and Mallach 2009, p. 15). Though mainly applied by local governments in the United States (Ellickson 1981; Calavita, Grimes, and Mallach 1997), some have suggested the use of inclusionary zoning as an instrument in (Asian) developing countries as well (Meda 2010; Turk and Altes 2014; Mukhija et al. 2015; Mishra and Mohanty 2017).

### **3.8 Land for Infrastructure Models**

Based on the idea that both road and public transport infrastructure investments—adding to improved locational accessibility—lead to higher land and real estate prices, many countries have implemented policies for integrated transit-oriented development (TOD) projects. These policies aim to integrate land and real estate development with transport infrastructure investments in different ways. We consider these policies as partial land management strategies, since they may contribute to the financing of investment in land and also serve as a value capture mechanism. Next to many more studies of how land value can be captured to finance TOD (including Cervero et al. 2004; Cervero and Murakami 2009; Ingram and Hong 2012; Murakami and Gregory 2012; Li 2013; Medda 2012; Sun et al. 2017), Suzuki et al. (2015) provide a good overview for developing countries in Asia and elsewhere of how land value capture instruments can be used to optimize and finance TOD strategies.

In other contexts, many (developing) countries make use of different types of land for infrastructure models. Public-private partnerships (PPPs) have been used as successful funding mechanism for the construction of major infrastructure projects in many developing countries in Asia (ADB 2008). The most common PPP model is the build-operate-transfer (BOT) model. Less familiar is the build-transfer (BT) model, which can be considered a land value capture tool. Land for infrastructure models can be seen as a specification of the BT model. Investors are offered ‘sweetheart’ price discounts or attractive rights to develop the land as compensation for constructing the infrastructure. The advantage of these models is that the authorities are able to develop economic infrastructures without having to incur expenditure through public funds. Investors generate their returns from the commercialization of acquired land. The possible downside of the land-for-infrastructure mechanism lies in the public sector’s weak position to negotiate the terms of the concession contract as public agencies aim to balance their urban planning objectives with motives for value capture. Frequently the original owners feel cheated when they see they were bought out at

low market prices and the benefit of the value added is reaped by wealthy private developers who gain political advantage from their public sector partners.

### **3.9 Establishment of Markets for Transferable Development Rights**

In some countries such as Brazil, India, the Netherlands, and the US, markets for transferable development rights have been established to support land development. For this, usually two interventions are needed: first, the development right over land must be separated from the ownership right over land; second, a market must be created where trading of development rights can take place. The establishment of a market for transferable development rights may serve two different purposes. First, in some countries, governments decide to create a market for development rights, enabling them to raise an income from selling these rights. The income generated from selling the development rights can be used to finance the costs of urban transformation projects and/or public infrastructure (Sandroni 2010; Smolka 2013; Suzuki et al. 2015). Second, transferable development rights are sometimes offered as non-financial compensation to landowners. The transfer of development rights is based on the ability to transfer additional value from one development to the other. This compensates for losses by those whose planning and development rights are reduced due to a government (planning) intervention (van der Veen et al. 2010; Alterman 2012).

### **3.10 Public Land Lease Systems**

In countries with state ownership of land, after the development, the land remains state owned and user rights over that land are leased to the leaseholder for a certain time period. In Asia, the best-known example is the People's Republic of China's land lease system (see, generally, [Wu and Yang 2020]). For urban development, local governments in the PRC would usually first expropriate rural land and service that land with a basic infrastructure. Then the local government would sell the user rights of the serviced land to a user for a pre-specified use. The land concession fee is determined either by negotiated agreement or (predominantly) by competitive tendering or auction. Land leasing is the common way for local governments to capture land value in the PRC. The revenue generated as extra-budgetary revenue is used to pay for local public infrastructure development, but there is usually no direct link between the lease on a plot of land and the infrastructure provided on the plot (Ingram and Hong 2012). Land finance in the PRC is a significant type of fiscal revenue strategy for local governments to raise revenue through land leasing and land tax in the PRC (Wang et al. 2012). Other examples of public land lease systems can be found in Viet Nam (Labbé and Musil 2013) and, in a very different context, the Netherlands (Ploeger and Bounjough 2017; Korthals Altes 2019).

## **4. COMPREHENSIVE LAND MANAGEMENT STRATEGIES**

We distinguish three types of comprehensive land management strategy: a private market land management strategy, a public comprehensive land banking strategy, and a collaborative private-private land management strategy.



## 4.1 Private Market Land Management Strategy

Fully private market land management strategies, in which a private land developer acquires land, puts in the infrastructure, and services the land with the intention to sell building plots to other developers or end users, are not very common. Private sector developers usually prefer to invest in real estate development (land and property development) and not in land development alone. Exceptions are public-private partnership land development agencies, which develop, for instance, industrial estates. As stated above, when private developers invest in real estate development they often take care of at least part of the land management activities, in which state bodies' partial land management strategies and instruments may support them.

## 4.2 Public Comprehensive Land Banking Model

In a public comprehensive land banking model, a public authority acts as a land developer that takes control over all aspects of the land development process, from the acquisition of the land to be developed to the ownership and management of the public space after ready-to-build-on building plots have been sold to private developers and/or end users (van der Krabben and Jacobs 2013; Valtonen, Falkenbach, and van der Krabben 2017). With such a comprehensive public land development model, local authorities are not only able to support a planned urban development (by offering building plots and public facilities), but they can achieve broader planning goals as well (e.g., reserve land for affordable housing and greenbelts; provide higher-quality public facilities; or use profits from the sale of building plots in a greenfield development to subsidize the development of a brownfield development). A crucial aspect of this development strategy is that local authorities can use the net income from buying (usually farming) land and selling building plots to pay for all the necessary public facilities for the development area. This public comprehensive land banking model differs from public strategic land banking because of its objectives: while strategic land banking is mainly used to secure land for future urban development and to transfer it from passive to active ownership when the time is right, the aims of the comprehensive model are to develop the whole location, except for the buildings, and to achieve these broader planning goals. Apart from the supposed planning-related benefits, several authors warn of the financial risks for municipalities relying on this development model without a serious risk management strategy (Buitelaar 2010; van der Krabben and Jacobs 2013; Valtonen, Falkenbach, and van der Krabben 2017), due to the effects of changing housing market conditions on demand for and price of building plots. Others have discussed the effectiveness and efficiency of this model (Hartmann and Spit 2015), and the degree of discretionary power municipalities have to apply this model and how they make use of that (Woestenburg, Spit, and van der Krabben 2019). We are aware of only a few countries making use of this development model. In Europe, extensive use of the development model seems to be limited to Finland (Viitanen et al. 2003; Valtonen, Falkenbach, and van der Krabben 2017), Sweden (Caesar 2016), and the Netherlands (Needham 1992; van der Krabben and Jacobs 2013; Buitelaar and Bregman 2016). We are not aware of the use of a similar development model in Asia. The PRC's land development model, based on its state ownership of land, has similarities but differs in comprehensiveness: Chinese cities would usually lease unserviced land to private developers, requiring the developers to install the public facilities.

### 4.3 Collaborative Private-private Land Management Model

Collaborative private-private land management models have sometimes been termed ‘sleeping beauty’—potentially interesting but rarely useful in practice (Alterman 2012, p. 765). We distinguish them into urban land readjustment models (also referred to as land consolidation and land pooling) and land trust models (distinguished into bank trusts and community land trusts). Urban land readjustment models have been promoted for a long time by international development organizations such as UN-HABITAT (2012), the World Bank, the Lincoln Institute for Land Policy, and the Japan International Cooperation Agency, while the Asian Development Bank has successfully introduced land trust models in several Asian countries (Kanda 2016; Yoshino et al. 2018) for the self-finance of infrastructure costs and the fair distribution of development gain offered by these models. A Private Trust Law has been approved by the Cabinet in Thailand and is being reviewed by the Council of State, which will facilitate the introduction of a land trust (Urapeepatanapong et al. 2016; Piewthongngam 2020).

#### 4.3.1 Urban Land Readjustment

As a mechanism for land consolidation, urban land readjustment (ULR)—also known as land pooling, replotting, land reassembly, reparcellation, repartition, *Kakaku seiri* (in Japan) and *Umlegung* (in Germany)—assembles and re parcels land by possible swapping of land positions among landowners without the need for any transaction, so that part of the land can be used for public services and infrastructure that benefits existing landowners as well as the city. Land readjustment is also used for planned development of urban fringe lands. A government agency assembles (often irregular) land parcels and then subdivides them into a planned grid layout of streets, open spaces, and serviced lots. Some of the plots are retained for cost recovery, while the remaining plots (slightly reduced in area) are transferred back to the landowners for development or sale (Archer 1992, p. 155). The process is most popularly used when land parcels are fragmented, and existing boundaries are in conflict with proposed planning outlines. The mechanism supports land-based financing of the proposed development plan in the sense that in addition to land required for infrastructure development, a portion of land is retained by the public agency for commercial sale in the market to recover the cost of development. The underlying assumption of ULR is that all necessary public infrastructure costs will be paid from the development gain that results from the proposed development. Reparcelling of the land results in higher land values for participating landowners as well. Urban land readjustment also differs from alternative development strategies because all individual land and property owners in an urban land readjustment project share the development gain (and the risks) of the (re)development of the area equally (van der Krabben and Lenferink 2018, p. 115).

Compared to the compulsory acquisition of land, which requires huge upfront cost, land readjustment is financially less burdensome for public agencies, particularly for developing economies. Unlike in the case of compulsory acquisition, where landowners at times lose all their land in return for monetary compensation, under land readjustment they receive back a new parcel of land, proportional in size or value to the original land parcel, that offers them the opportunity to benefit from the new development. The size of land received after readjustment is smaller, but the value is raised due to infrastructure improvements and other developments caused by the project. As much care as possible is taken to minimize displacement by allocating the new land parcel near to each owner’s original parcel.

Land assembly and development through land readjustment generates desirable outcomes for all stakeholders by creating planned development patterns, increasing land values, and limiting displacements. This is not to say that the process is free of challenges. Often it is difficult to get landowners on board when they do not recognize the social function of property, or distrust the motives, commitment, and abilities of the government and sponsors, and are consequently less motivated to contribute a portion of land for public amenities (Hong and Brain 2012). Also, lack of representativeness of original landowners in the planning process, unclear or unrecognized land titles, and poor ownership records make it logistically difficult to implement the process (Hong and Brain 2012; Price 2020).

ULR has been used in many EU countries, but not in the United Kingdom and Ireland. While Germany, Finland, the Netherlands, Italy, Denmark, France, Spain, and Norway have long traditions in using ULR (although in some of these countries the instrument has indeed appeared a 'sleeping beauty'), other countries in Europe (Albania, Armenia, Croatia, Georgia, Kosovo, Moldova, Montenegro, Serbia, and the Russian Federation) have also used forms of land consolidation. The Netherlands has a more than 100-year tradition of agricultural land readjustment, but until recently lacked regulation for urban land readjustment (van der Krabben and Needham 2008). With the introduction of a new planning law in 2018, however, ULR regulation has now been introduced here as well (van der Krabben and Lenferink 2018).

Globally, different forms of land readjustment can be found in Asia (the PRC; India; Indonesia; Japan; Nepal; the Democratic People's Republic of Korea; the Republic of Korea; Taipei, China; Thailand; Turkey; and Pakistan), in Africa (Egypt, Kenya, Morocco, and Zimbabwe), in North and Central America (Canada, Mexico, and the United States), in South America (Chile and Colombia), in the Middle East (Israel, Lebanon), and in Australia (Home 2007; Demetriou et al. 2011). Particularly, in Japan (Sorensen 2000), the Republic of Korea (Kresse et al. 2020), and Taipei, China (Lin 2005), ULR has proven to be very successful in transforming traditional places in modern cities. Different countries have used different models for land readjustment, though the underlying principles have been the same.

In general, an urban land readjustment scheme has the following characteristics (van der Krabben and Lenferink 2018, p. 116):

All property owners are invited to temporarily transfer their property rights to a third party to allow the re-parcelling of the land. (...) The land readjustment scheme can only be implemented when all property owners participate or can be enforced to participate. (...) After a decision has been taken, the third party will re-parcel the land into building plots that match the layout of the new development plan for the location. Consequently, all owners are assigned a building plot to build on, equal to their original share, either in value or in size (if not, compensation takes place). The value increase of the land as a result of the land readjustment will first be used to cover the costs of the process and to make land available for necessary public facilities related to the new development. The remaining will go to the owners. In some countries, also the costs for the realization of public facilities are paid out of the value increase.

The participation of landowners is necessary for ULR to materialize, and different authorities have different regulations around this. Some require the voluntary participation of all; others require majority participation (the rest could be without consent); and some are compulsory.

In Japan, land readjustment has been well utilized, in place of compulsory acquisition, to provide land for roads, parks, and riverway improvements (Shultz and Schnidman 1990). Land readjustment in Japan is executed under the Land Readjustment Act. In

some cases where land readjustment has been used, public utility projects (such as sewers and gas mains) have also been included, though not mandated under the Land Readjustment Act. The infrastructure and public facilities are financed through the sale of financial resource land, which is retailed by the project authority executing land readjustment. For projects which require a larger outlay, the cost of public facilities is shared by the national, prefectural, and local governments. An agreement by two-thirds of the affected households provides an automatic legal mandate for land readjustment to proceed. However, in practice, very rarely is this mandate used to force the remaining one-third of households to participate against their will. Project authorities make serious and patient attempts to obtain a consensus among all the households, which results in drawn-out implementation and deal-breaking delays. Taipei, China and the Republic of Korea have followed similar processes for land consolidation to Japan. In countries such as Malaysia and Thailand, where the Japan International Cooperation Agency (JICA) is providing technical assistance for land consolidation, the procedures used are similar to land readjustment in Japan. However, these countries also have provision for, and occasional resource to, compulsory acquisition of land under the Land Acquisition Act (Agrawal 1999). Land readjustment in Indonesia requires agreement by at least 85% of landowners covering at least 85% of the area as a basis to implement the project. Once the agreement of 85% of landowners is achieved, land from the remaining 15% of households is acquired compulsorily. Legal provisions for compensation in cases of compulsory acquisition in Indonesia are frequently inadequate. This has resulted in the pressured participation of even those who do not initially consent to land readjustment (Guild 2020).

Lin (2005) analyzed the Neihu land readjustment project in Taipei, China. The land use prior to the project in this area was agriculture. The city required industrial sites to relocate scattered illegal factories and land to augment the housing supply. These objectives were achieved through a land readjustment project. Lin (2005) argued that land readjustment has not solved the problem of co-ownership. The readjusted land that had a single owner was bought by developers, but land under co-ownership saw few transactions, and was largely bought by speculators. For a land readjustment project to succeed, it is important that the readjusted sites and developable land can be marketed effectively.

In the Republic of Korea, land readjustment serves broader social goals beyond the provision of urban services, including for low-income housing (Shultz and Schnidman 1990). Western areas of Germany use compulsory land readjustment primarily in peripheral areas for town expansion and renewal projects that are implemented by the local government (Shultz and Schnidman 1990). These projects do not require landowner consent (Shultz and Schnidman 1990). With local authority approval, land readjustment projects can also be undertaken by owners or developers. Due to the compulsory nature of land readjustment in Germany, it takes one to three years for replatting and two years or less for the installation of services, compared to five to ten years in other countries. A significant part of the project cost (as much as 90%) for the provision of roads and open space is borne by landowners (Shultz and Schnidman 1990). In Germany, unlike other countries with land readjustment programs, contributions from landowners to the cost of public projects usually take the form of cash rather than land to be sold to recover costs. There is, however, an upper limit of 30% of the market value of the land, or the land itself, that can be taken from landowners by the local authority for public use. Land readjustment, called land pooling in Australia, is used only in the one state of Western Australia (Shultz and Schnidman 1990) where financing and transforming privately-owned land into planned, serviced building sites has been attempted.

Another variant of ULR has been used in Lebanon in its reconstruction of the war-torn Beirut Central District (BCD). In this model, the redevelopment of BCD was handed over to a private company, Solidere. Instead of re-parcelling the land to previous owners, landowners were allocated equity shares in the development company, Solidere, in proportion to their land contribution. The company also issued shares in the open market, which allowed it to raise cash from investors for development purposes. An enabling legislation locked property owners in a compulsory association with investors and the shares replaced the deeds. The right to occupation or return for property owners was extinguished (Home 2007).

Li and Li (2007) discuss the case of vertical land readjustment in Hong Kong, China, as a high-rise high-density city with limited opportunities for traditional horizontal land readjustment. Most crucial is the demand for residential buildings, for which the government often relies on the redevelopment of old urban residential buildings to increased height and density. While absolute ownership of all land rests with the government, the leasehold ownership of land is distributed among apartment owners as an undivided share. This is popularly known as the tenancy-in-common system, where tenancy implies leasehold (and not rental tenant) ownership held in common by the owners rather than by a single owner (Li and Li 2007). Using the case study of Lai Sing Court, Li and Li (2007) explain the concept of vertical land readjustment, which means the redevelopment of an existing residential site in a way such that the original owners receive back a proportionate share of housing in the new development that has more units than in the previously existing building. The process requires the cooperation and participation of the original owners, as well as of the developer and authority. Land readjustment in this case reduces the risks for the developer, as the requirement to secure upfront financial commitment to buy property rights from the owners is not there. The gain from the project for developers is through the sale of extra floor area after completion of the project. The original owners have the flexibility to sell their strata contracts in the open market (Li and Li, 2007). The original owners, on the other hand, work together under dedicated leadership provided by the chairman of the owners' association. In summary, a joint coordinated effort from all stakeholders and fair distribution of benefits of redevelopment have underpinned the success of this model (Li and Li 2007).

A perceived major drawback of land readjustment is the long gestation period for project execution and fulfillment (Shultz and Schnidman 1990). Japanese land readjustment projects, for instance, often face numerous administrative appeals filed by property owners who object to the property redistribution scheme. Resolving the conflicting interests of numerous owners in a large infrastructure project can take more than a decade. Another drawback of land readjustment programs is that they lead to speculation in real estate and a rise in land prices, as a result of to which objectives such as providing low- and moderate-income housing become untenable.

In another criticism, Hong (2007) argues that the use of state power to take private property should only be for valid public purposes with just compensation. When the boundaries of private properties are readjusted to facilitate private redevelopment, the purpose can no longer be justified as purely public. As per the constitution, Hong (2007) contends that the basis for a land readjustment agency to assemble and transfer private use rights for private development is unlawful. Not without reason, opponents have accused public authorities of using these public powers for private or unacceptably mixed public-private gains.

Using the German land readjustment system as an example, Davy (2007) analyzes the legal issues associated with land readjustment. He argues that in 2001, the First Chamber of the German Constitutional Court ruled that compulsory land readjustment

does not equate to compulsory acquisition. Rather, land readjustment “would only use the legislative power to determine the content and scope of property”, which is within the legal right of federal and state governments according to Article 14 of the German Constitution. The court also ruled that since the acquisition of land is temporarily and largely for private use, the constitutional provision that governs the reasonableness of compulsory acquisition could not be applied in cases of compulsory land readjustment. This ruling has enabled the use of compulsory land readjustment for assembling land for redevelopment projects in Germany. However, treating compulsory land readjustment as a service to private landowners has constrained the government’s ability to procure land from property owners for public purposes or for land value capture to finance local infrastructure (Davy 2007).

We observe that land readjustment can be a time-consuming process, as its implementation requires that land is assembled through consensus rather than coercion. Coercion is only the last resort when all attempts for consensus have been exhausted. Consequently, land readjustment, although preferable for its voluntariness and acceptance, takes much longer than other planning instruments for assembling land.

In terms of acceptability and applicability of land readjustment, small lots and lots with suboptimal shapes have larger tendency to be redeveloped. Regarding ownership, lots occupied by the city are more likely to be assembled, while private owner-occupation reduces the likelihood of assembly (Lindenthal, Eichholtz, and Geltner 2017). Lindenthal et al. also argue that the likelihood of joint redevelopment increases when landowners have the same occupation and/or the same socio-political beliefs and religion. A similar mechanism has been used in the case of Japan, where there has been wide application of land readjustment. It has been argued that Japanese society, where working culture is organized in groups, instills a collaborative and consensual decision-making that facilitates the implementation structure of land readjustment. Within this organizational framework, it may be asserted that in Western cultures, which underscore the importance of individual freedom and self-expression over collective or state control, land readjustment projects like in Japan would be difficult to propose and implement. Sorensen (2007) disagrees with this characterization, contending that proposals for the readjustment of land in Japan have been just as contentious and fiercely contested as in other countries.

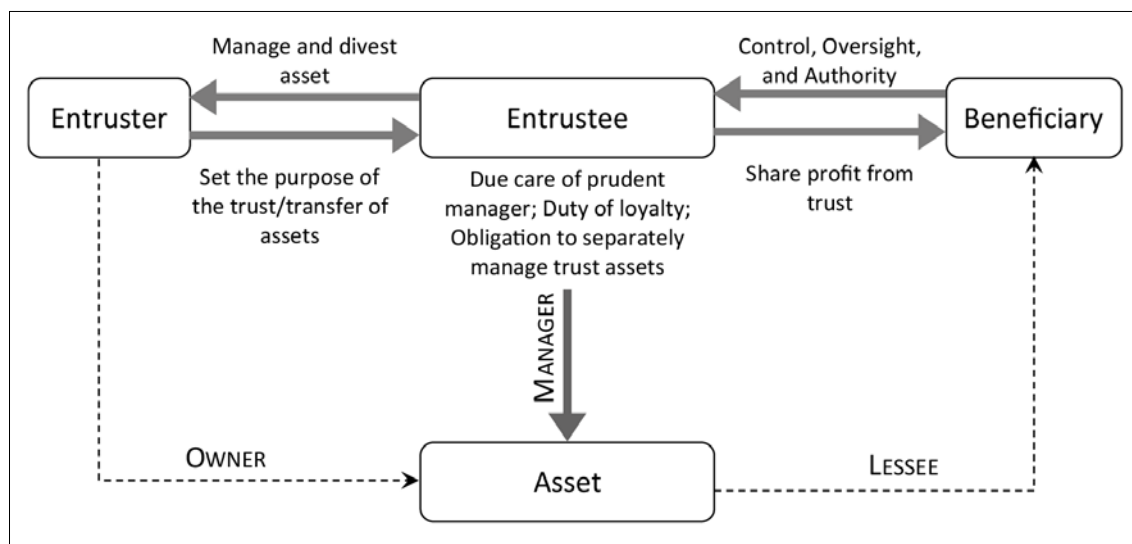
#### **4.3.2 Land Trusts**

A land trust model combines individual ownership rights with collective landownership by separating the ownership of land and structures on the land (Fujii 2016). The entrustee, who can be either a trust bank or a cooperative, acquires ownership of land from the original landowners in a certain area and manages and develops that land on behalf of the entrusters (the original landowners). By entrusting their land to the trust bank or community land trust, the entrusters can benefit from the entrustee’s efforts to pool all land and invest in the development of that land in a more effective way. In Yoshino et al. (2018), we find the example of a real estate trust. Residents living in small landed houses may increase the efficiency of their land utilization by consolidating the land and building apartments or office blocks on it. The mechanism used is that land owners entrust their land to the trust bank, and the trust bank builds a large building on the consolidated land to effectively utilize the land. Landowners who contributed land receive apartments in the building and part of the profit generated from commercial leasing of space in the building as dividends from the trust bank (Yoshino et al. 2018, p. 8). Similar to the land readjustment mechanism, the consolidation of land results in more profitable development and the original owners can share in these

profits. In a land readjustment scheme, the original landowners will receive full ownership of land and properties again after the readjustment has been completed; in a land trust model, the original landowners receive user rights, while ownership of the land remains with the entrustee. In the latter case, the original landowners will additionally receive part of the profits as dividends from the trust bank.

A simplified model of land trust is presented in Figure 3. The entruster may decide not to give away the property immediately and instead leave it with the entrustee after defining certain conditions for the beneficiary to receive the profit (Yoshino et al. 2018). The land trust (or entrustee) receives trusts of real property or land from the entrusters and takes on the brokerage and appraisal of entrusted properties to the beneficiaries (Yoshino et al. 2018).

**Figure 3: A Model of Land-Lease Arrangement Organized by a Land Trust Bank**



Source: Authors' adaptation of Yoshino et al. (2018, p. 7).

The application of the above model has been explained by Yoshino et al. (2018) in the context of the densely populated city of Tokyo, where small landed houses are common. The original landowners may maximize the use of their property by consolidating land through a land trust that can then construct a high-rise residential building to actualize the development potential of the land. The original owners may benefit by securing a bigger apartment unit in the new development, while also receiving part of the development profit as dividends from the trust bank.

Yoshino et al. (2018) advocate the land trust model as an inclusive method of land assembly where the original landowner can be party to development returns (see Hossain and Yoshino [2020]). Also, there are financial incentives for those investing privately in infrastructure projects which are otherwise unfeasible for the government, particularly in developing countries. However, this method has been rarely used outside Japan, and therefore its practical challenges in developing Asia are yet to be examined.

## 5. CONCLUSION

We aimed with this paper to prepare an overview of land use management strategies and instruments encountered in different parts of the world. We by no means had the intention to assess the effectiveness, efficiency, and/or social equity of the different strategies, but rather wanted to describe their basic features and how and where they are applied. For further reading of studies that have assessed the working of these strategies and instruments, we refer to many of the references used in this paper. We conclude with a warning to the reader. Though some of these strategies and instruments may seem attractive to countries in which they are missing or not used, international transfer of policies and instruments is often not without problems. Attention to (differences in) institutional contexts, cultural expectations, legal procedures, and market conditions is essential when considering in one country the use of strategies and instruments that have been successfully applied in another.



## REFERENCES

- Adams, D. and Tiesdell, S. (2012) *Shaping Places: Urban Planning, Design and Development*. Abingdon, UK: Routledge.
- Agrawal, P. (1999) "Urban land consolidation: a review of policy and procedures in Indonesia and other Asian countries." *GeoJournal* 49 (3): 311–322.
- Albrecht, J. (2018) "Compulsory property acquisition for urban densification in Germany." In *The Law and Practice of Compulsory Acquisition in England and Wales*, edited by G. Searle, pp. 51–66. Oxon: Routledge.
- Alexander, Frank S. (2005) "Land bank strategies for renewing urban land." *Journal of Affordable Housing and Community Development Law* 14 (2): 140–169.
- Allen, Tom (2000) *The Right to Property in Commonwealth Constitutions*. 1st edition. Cambridge: Cambridge University Press.
- Alterman, R. (2009) *Can the Unearned Increment in Land Values be Harnessed to Supply Affordable Housing?* UN Habitat GLNT Conference, Warsaw, October.
- Alterman, R. (2012) "Land use regulations and property values: The 'windfalls capture' idea revisited." In *The Oxford Handbook of Urban Economics and Planning*, edited by G. Knaap and N. Brooks, pp. 755–786. Oxford: Oxford University Press.
- Archer, R. (1992) "Introducing the urban land pooling/readjustment technique into Thailand to improve urban development and land supply." *Public Administration and Development* 12: 155–174.
- ADB (2008) *Public Private Partnership Handbook*. Manila: Asian Development Bank.
- Benson, Bruce L. (2008) "The evolution of eminent domain: a remedy for market failure or an effort to limit government power and government failure?" *The Independent Review* 12 (3): 423–432.
- Bosch, J. (2009). "How urban planning instruments can contribute in the fight against homelessness. An international overview of inclusionary housing." *European Journal of Homelessness* 3, 155–177.
- Buitelaar, E. (2010) "Cracks in the myth: challenges to land policy in the Netherlands." *Tijdschrift voor Economische en Sociale Geografie* 101 (3): 349–356.
- Buitelaar, E. and Bregman, A. (2016) "Dutch land development institutions in the face of crisis: trembling pillars in the planners' paradise." *European Planning Studies* 24 (7): 1281–1294.
- Caesar, C. (2016) "Municipal landownership and housing in Sweden." Doctoral Thesis, Real Estate Planning and Land Law Department of Real Estate and Construction Management School of Architecture and the Built Environment Royal Institute of Technology (KTH). <https://www.diva-portal.org/smash/get/diva2:1044229/FULLTEXT01.pdf>.
- Calavita, N., Grimes, K. and Mallach, A. (1997) "Inclusionary housing in California and New Jersey: a comparative analysis." *Housing Policy Debate* 8 (1): 109–142.
- Calavita, N. and Mallach, A. (2009) "Inclusionary housing, incentives and land value recapture." *Land Lines* 21 (1): 15–21.
- Cervero, R. and Murakami, J. (2009) "Rail and property development in Hong Kong: experiences and extensions." *Urban Studies* 46 (9): 2019–2043.

- Cervero, R., Murphy, S., Ferrell, C., Goguts, N., Tsai, Y.-H., Arrington, G. B., Boroski, J., Smith-Heimer, J., Golem, R., Peninger, P., Nakajima, E., Chui, E., Dunphy, R., Myers, M. and McKay, S. (2004). *Transit-Oriented Development in the United States: Experiences, Challenges, and Prospects*. Transit Cooperative Research Program (TCRP) Report 102. Transportation Research Board, Washington.
- Christudason, A. (2018) "Land acquisition in Singapore." In *Compulsory Property Acquisition for Urban Densification*, edited by G. Searle, pp. 124–147. Oxon: Routledge.
- Cohen, S. A. (2005) "State responsibility and attribution: When is a State responsible for the acts of State enterprises?" In: Weiler T, ed. *International Investment Law and Arbitration: Leading Cases from the ICSID, NAFTA, Bilateral Treaties and Customary International Law*: 17–45. Cameron May Ltd. London.
- Cox, G. (2018) "Compulsory acquisition in UK public housing estate renewal." In *Compulsory Acquisition is Viewed in the United States as an Attribute of Sovereignty*, edited by G. Searle, pp. 32–50. Oxon: Routledge.
- Cullingworth, B. (1994) *The Political Culture of Planning: American Land Use Planning in Comparative Perspective*. New York/London: Routledge.
- Cunningham, C. (2013) *Estimating the Holdout Problem in Land Assembly*. Atlanta, GA: Federal Reserve Bank of Atlanta.
- Davy, B. (2007) "Mandatory happiness? Land readjustment and property in Germany." In *Analyzing Land Readjustment: Economics, Law and Collective Action*, edited by Y.-H. Hong and B. Needham, pp. 37–56. Cambridge, MA: Lincoln Institute of Land Policy.
- Demetriou, D., Stillwell, J. and See, L. (2011) "Land consolidation in Cyprus: why is an integrated planning and decision support system required?" *Land Use Policy*.
- Ellickson, R. C. (1981) "The irony of inclusionary zoning." *Faculty Scholarship Series* 468. [https://digitalcommons.law.yale.edu/fss\\_papers/468](https://digitalcommons.law.yale.edu/fss_papers/468).
- Enemark, S. (2005) *Land Management and Development*. CLGE International Conference 2005, European Professional Qualifications in Geodetic Surveying, Brussels, 1–2 December 2005.
- Firmans, T. (2000) "Rural to urban land conversion in Indonesia during boom and bust periods." *Land Use Policy* 17 (1): 13–20.
- Firmans, T. (2004) "Major issues in Indonesia's urban land development." *Land Use Policy* 21 (4): 347–355.
- Fishman, R. P. and Gross, R. D. (1972) "Public land banking: a new praxis for urban growth." *Case Western Reserve Law Review* 23 (1972): 897–975.
- Fujii, Y. (2016) "Spotlight on the main actors: how land banks and community development corporations stabilize and revitalize Cleveland neighborhoods in the aftermath of the foreclosure crisis." *Housing Policy Debate* 26 (2): 296–315.
- George, H. (1881) *Progress and Poverty*. D. Appleton and Company, New York.
- Golland, A. (2003) *Models for Land Assembly in the UK. A Comparative Analysis of Other European Approaches*. RICS Foundation, London.

- Guild, J. (2020) Land Acquisition in Indonesia and Law No. 2 of 2020. In *Equitable Land Use for Asian Infrastructure*, edited by P. Tiwari, G. Stillman, and N. Yoshino. Forthcoming. Tokyo: ADBI Press.
- Guo, X. (2001) "Land expropriation and rural conflicts in China." *The China Quarterly* 166: 422–439.
- Hall, D. Hirsch, P. and Li, T. M. (2011) *Powers of Exclusion: Land Dilemmas in Southeast Asia*. Honolulu: University of Hawaii Press.
- Hartmann, T. and Spit, T. (2015) "Dilemmas of involvement in land management: comparing an active (Dutch) and a passive (German) approach." *Land Use Policy* 42: 729–737.
- Hastings, E. M. and Adams, D. (2005) "Facilitating urban renewal: changing institutional arrangements and land assembly in Hong Kong." *Property Management* 23 (2): 110–121.
- Heller, Michael A. (2000) "Critical approaches to property institutions." *Columbia Law School: Scholarship Archive* 79, 417–434.
- Holtslag-Broekhof, S., Hartmann, T. and Spit, T. (2018) "Compulsory acquisition in the Netherlands." In *Compulsory Property Acquisition for Urban Densification*, edited by G. Searle, pp. 8–17. Oxon: Routledge.
- Holzman-Gazit, Y. (2007) *Land Expropriation in Israel: Law, Culture and Society*, London: Routledge.
- Home, R. (2007) "Land readjustment as a method of development land assembly." *Town Planning Review* 78 (4): 459–478.
- Hong, Y.-H. (2007) "Assembling land for urban development." In *Analysing Land Readjustment: Economics, Law and Collective Action*, edited by Y.-H. Hong and B. Needham, pp. 4–34. Cambridge: Lincoln Institute of Land Policy.
- Hong, Y.-H., and Brain, I. (2012) "Land readjustment for urban development and post-disaster reconstruction." *Land Lines* January: 1–9.
- Hossein, M., and N. Yoshino (2020) Implementing Land Trust in Bangladesh as a Strategy for Financing Infrastructure and Sustainable Land Management. In *Equitable Land Use for Asian Infrastructure*, edited by P. Tiwari, G. Stillman, and N. Yoshino. Forthcoming. Tokyo: ADBI Press.
- Ingram, G. and Hong, Y.-H. (2012) "Land value capture: types and outcomes." In *Value Capture and Land Policies: Proceedings of the 2011 Land Policy Conference*, Lincoln Institute of Land Policy, edited by G. Ingram, and Y.-H. Hong, pp. 3-18. Cambridge, MA.
- Jacobs, H. M. (2008) "The future of the regulatory takings issue in the US and Europe: divergence or convergence?" *Urban Lawyer* 40 (1): 51–72.
- Kanda, H. (2016) "A trust for commercial use in Japan: An unexpected winner in the race among organizational forms." In *Research Seminar, Law and Finance*. Paris.
- Korthals Altes, W. (2019) "Multiple land use planning for living places and investment spaces." *European Planning Studies* 27 (6): 1146–1158.
- Kresse, K., Kang, M., Kim, S. and van der Krabben, E. (2020) "Value capture ideals and practice: development stages and the evolution of value capture policies." *Cities*. <https://doi.org/10.1016/j.cities.2020.102861>.

- Labbé, D. (2011) "Urban destruction and land disputes in periurban Hanoi during the late-socialist period." *Pacific Affairs* 84 (3): 435–454.
- Labbé, D. and Musil, C. (2013) "Periurban land redevelopment in Vietnam under market socialism." *Urban Studies* 51 (6): 1146–1161.
- Leigland, J. and Thomas, R. H. (1997) "Municipal bonds as alternatives to PPPs: facilitating direct municipal access to private capital." *Development Southern Africa* 16 (4): 729–750.
- Li, L. (2013) "Innovative local practices of collective land acquisition through farmer participation." In *Farmland Acquisition in China: Governance, Local Practices and International Experiences*, edited by Y. Zhao, L. Verstappen and W. Kolkman, pp. 115–131. Beijing: 科学出版社.
- Li, L. H. and Li, X. (2007) "New experiments to solve urban renewal problems in China." In *Analyzing Land Readjustment: Economics, Law and Collective Action*, edited by Y.-H. Hong and B. Needham, pp. 135–158. Cambridge, MA: Lincoln Institute of Land Policy.
- Lin, T.-C. (2005) "Land assembly in a fragmented land market through land readjustment." *Land Use Policy* 22: 95–102.
- Lindenthal, T., Eichholtz, P. and Geltner, D. (2017) "Land assembly in Amsterdam, 1832–2015." *Regional Science and Urban Economics* 64: 57–67.
- Louw, E. (2008) "Land assembly for urban transformation: the case of 's-Hertogenbosch in the Netherlands." *Land Use Policy* 25 (1), 69–80.
- McCarthy, J. F., Jacqueline, A. C. and Afiff, S. (2012) "Trajectories of land acquisition and enclosure: development schemes, virtual land grabs, and green acquisitions in Indonesia's outer islands." *The Journal of Peasant Studies* 39 (2): 521–549.
- McMichael, P. (2012) "The land grab and corporate food regime restructuring." *The Journal of Peasant Studies* 39 (3–4): 681–701.
- Meda, J. B. (2010) "Homelessness among Migrants in Spain". *European Journal of Homelessness*, 4, 139–154.
- Medda, F. (2012) "Land value capture finance for transport accessibility: a review." *Journal of Transport Geography* 25 (11): 154–161.
- Miceli, T. (1991) "Compensation for the taking of land under eminent domain." *Journal of Institutional and Theoretical Economics* 147 (2): 354–363.
- Mishra, A. K. and Mohanty, P. K. (2017) "Urban policy in Asia Pacific countries: a case for inclusionary zoning and housing." *Asia-Pacific Journal of Regional Science* 1: 191–215.
- Mukhija, V., Das, A., Regus, L. and Tsay, S. S. (2015) "The tradeoffs of inclusionary zoning: what do we know and what do we need to know?" *Planning Practice and Research* 30 (2): 222–235.
- Munch, P. (1976) "An economic analysis of eminent domain." *The Journal of Political Economy* 84 (3): 473–497.
- Muñoz-Gielen, D. and van der Krabben, E. (Eds.) (2019) *Public Infrastructure, Private Finance*. London: Routledge.

- Murakami, J. and Gregory, K. I. (2012) "Transit value capture: new town codevelopment models and land market updates in Tokyo and Hong Kong." In *Value Capture and Land Policies: Proceedings of the 2011 Land Policy Conference*, Lincoln Institute of Land Policy, edited by G. K. Ingram and Y.-H. Hong, pp. 285–320. Lincoln Institute of Land Policy: Cambridge, MA.
- Needham, B. (1992) "A theory of land prices when land is supplied publicly: the case of the Netherlands." *Urban Studies* 29 (5): 669–686.
- Ng, I. (2002) "Compulsory purchase and compensation in Hong Kong: A study of the role of the Land Development Corporation in urban renewal." *Property Management* 20 (2): 167–182.
- Piewthongngam, N. (2020) Land Trusts in Thailand: Current Issues and Prospects. In *Equitable Land Use for Asian Infrastructure*, edited by P. Tiwari, G. Stillman, and N. Yoshino. Forthcoming. Tokyo: ADBI Press.
- Platz, D. (2009) "Infrastructure finance in developing countries: the potential of sub-sovereign bonds." DESA Working Paper No. 76, New York: UN Department of Economics and Social Affairs.
- Ploeger, H. and Bounjouh, H. (2017) "The Dutch urban ground lease: a valuable tool for land policy?" *Land Use Policy* 63: 78–85.
- Price, J. (2020) The Status of Land Rights and Title in Major Developing Regions of Asia and the Pacific. In *Equitable Land Use for Asian Infrastructure*, edited by P. Tiwari, G. Stillman, and N. Yoshino. Forthcoming. Tokyo: ADBI Press.
- Ricardo, D. (1817) *On the Principles of political Economy and Taxation*. John Murray, London.
- Sagalyn, L. B., Hong, Y.-H. and Needham, B. (Eds.) (2007) *Land Assembly, Land Readjustment, and Public–Private Redevelopment*, pp. 159–182. Cambridge, MA: Lincoln Institute of Land Policy.
- Sandroni, P. (2010) "A new financial instrument of value capture in São Paulo: certificates of additional construction potential" In *Municipal Revenues and Land Policies*, edited by G. Ingram and Y.-H. Hong pp. 218–236. Cambridge, MA: Lincoln Institute of Land Policy.
- Searle, G. (2018) "Conclusion." In *Compulsory Property Acquisition for Urban Densification*, edited by G. Searle, pp. 173–187. Oxon: Routledge.
- Shatkin, G. (2016) "The real estate turn in policy and planning: land monetization and the political economy of peri-urbanization in Asia." *Cities* 53: 141–149.
- Shoup, D. (2008) "Graduated density zoning." *Journal of Planning Education and Research* 28: 161–179.
- Shukla, J. (2020) Property Institutions and Their Impact on Land Assembling Strategies. In *Equitable Land Use for Asian Infrastructure*, edited by P. Tiwari, G. Stillman, and N. Yoshino. Forthcoming. Tokyo: ADBI Press.
- Shultz, M. M. and Schnidman, F. (1990) "The potential application of land readjustment in the United States." *The Urban Lawyer* 22 (2): 197–243.
- Sluysmans, J., Verbist, S. and Waring, E. (Eds.) (2015) *Expropriation Law in Europe*. Netherlands: Wolters Kluwer.
- Smolka, M. O. (2013) *Implementing Value Capture in Latin America*. Cambridge, MA: Lincoln Institute of Land Policy.

- Sorensen, A. (2000) "Conflict, consensus or consent: implications of Japanese land readjustment practice for developing countries." *Habitat International* 24 (1): 51–73.
- Sorensen, A. (2007) "Consensus, persuasion and opposition: organizing land readjustment in Japan." In *Analysing Land Adjustment: Economics, Law and Collective Action*, edited by Y.-H. Hong and B. Needham, pp. 89–114. Cambridge, MA: Lincoln Institute of Land Policy.
- Steel, G., Van Noorloos, F. and Klaufus, C. (2017) "The urban land debate in the global South: new avenues for research." *Geoforum* 83: 133–141.
- Stoebuck, W. (1972) "A general theory of eminent domain." *Washington Law Review* 47: 553–608.
- Stoebuck, W. B. (1986) "Suburban land banking." *University of Illinois Law Review* 1986 (2): 581–608.
- Stillman, G. B. and Bharule, S. (2020) "Governance institutions and key elements for the integrated planning and equitable deliverability of high-quality infrastructure." In *Handbook on High-Speed Rail and Quality of Life*, edited by Y. Hayashi, S. Bharule, Y. Hayashi and K. E. S. Ram, chapter 25. Tokyo: ADBI Press.
- Sullivan, E. (2018) "Eminent domain use for densification in the United States." In *Compulsory Acquisition is Viewed in the United States as an Attribute of Sovereignty*, edited by G. Searle, pp. 18–31. Oxon: Routledge.
- Sun, J., Chen, T., Cheng, Z., Wang, C. C. and Ning, X. (2017) "A financing mode of urban rail transit based on land value capture: a case study in Wuhan City." *Transport Policy* 57: 59–67.
- Suzuki, H., Jin, M. and Hong, Y.-H. (2015) *Financing Transit-Oriented Development with Land Values: Adapting Land Value Capture in Developing Countries*, Washington, DC: World Bank Publications.
- Temel, J. W. (2001) *The Fundamentals of Municipal Bonds*. Wiley.
- Turk, S. S. and Altes, W. K. K. (2011) "Potential application of land readjustment method in urban renewal: analysis for Turkey." *ASCE Journal of Urban Planning and Development* (March): 7–19.
- United Nations Economic Commission for Europe. (1996) *Land Administration Guidelines*. Geneva.
- Urapeepatanapong, K., Leelanuntakul, C., Jittimaporn, S., Sittsakonsin, P., Tantisattamo, A. and Charoenkitraj, N. (2016) *Insight: Thailand Arrival of Private Trust Law*. <https://news.bloombergtax.com/daily-tax-report-international/insight-thailandarrival-of-private-trust-law> (accessed 11 February 2020).
- Valtonen, E., Falkenbach, H. and van der Krabben, E. (2017) "Risk management in public land development projects: comparative case study in Finland, and the Netherlands." *Land Use Policy* 62: 246–257.
- van der Krabben, E. and Jacobs, H. M. (2013) "Public land development as a strategic tool for redevelopment: reflections on the Dutch experience." *Land Use Policy* 30 (1): 774–783.
- van der Krabben, E. and Lenferink, S. (2018) "The introduction of urban land readjustment legislation as an institutional innovation in Dutch land policy." *Habitat International* 76: 114–121.

- van der Krabben, E. and Needham, B. (2008) "Land readjustment for value capturing: a new planning tool for urban development." *Town Planning Review* 79 (6): 485–506.
- van der Veen, M. (2009) *Contracting for Better Places: A Relational Analysis of Development Agreements in Urban Development Projects*. Amsterdam: IOS/Delft University Press.
- Viitanen, K., Palmu, J., Kasso, M., Hakkarainen, E. and Falkenbach, H. (2003) "Real estate in Finland." Publication B107 in *Real Estate Studies and Economic Law*. Helsinki: Helsinki University of Technology, Institute of Real Estate Studies, Espoo.
- Von Braun, J. and Meinzan-Dick, R. (2009) '*Land Grabbing*' by Foreign Investors in Developing Countries: Risks and Opportunities. IFPRI Policy Brief 13, April 2009.
- Woestenburg, A., Spit, T. and van der Krabben, E. (2018) "Land policy discretion in times of economic downturn: how local authorities adopt to a new reality." *Land Use Policy* 77: 801–810.
- World Bank (2020) *The Right of Preemption*. <https://urban-regeneration.worldbank.org/node/35> (accessed 27 July 2020).
- Wu, S., and Z. Yang (2020) The People's Republic of China's Urban Land Auction and Land Allocation. In *Equitable Land Use for Asian Infrastructure*, edited by P. Tiwari, G. Stillman, and N. Yoshino. Forthcoming. Tokyo: ADBI Press.
- Yoshino, N., Paul, S., Sarma, V. and Lakhia, S. (2018) "Land acquisition and infrastructure development through land trust laws: a policy framework for Asia." ADBI Working Paper Series, No. 854. Tokyo: Asian Development Bank Institute.
- Yoshino, N. and Stillman, G.B. (2017) "Kick start private infrastructure with future tax-sharing bonds". Reconnecting Asia, 26 May.
- Zevenbergen, J., Ferlan, M. and Mattasson, H. (2007) "Pre-emption rights compared." In *Real Property Transactions: Procedures, Transaction Costs and Models*, edited by J. Zevenbergen, A. Frank and E. Stubkjaer, pp. 261–288. Amsterdam: IOS Press.
- Zuhui, H. and Hui, W. (2002) "Land expropriation for a non-public purpose and compensation for its development right." *Economic Research Journal*.