

# Revitalizing Places: Improving Housing and Neighborhoods from Block to Metropolis

## Revitalizando Ciudades: Mejorando Viviendas y Barrios desde la Cuadra a la Metrópolis

Rethinking Social Housing in Mexico Project

Harvard Graduate School of Design

Ann Forsyth, Charles Brennan, Nélida Escobedo Ruiz, and  
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With contributions from Tim Czerwienski, Virginia  
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and Antara Tandon

Rethinking Social Housing in Mexico  
<http://research.gsd.harvard.edu/socialhousingmexico>  
Harvard Graduate School of Design

Revitalizing Places emphasizes international and Mexican experiences and identifies potential policies, programs, planning approaches, and tools to help implement the far-reaching 2012 Mexican housing and urban development policy.

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## Executive Summary

What kinds of urban planning and design interventions can help improve housing and urban development practice in Mexico and successfully implement the new national housing policy? How can metropolitan areas be redeveloped and expanded more efficiently and equitably using housing as a key tool?

Emphasizing international and Mexican experience, this report identifies potential policies, programs, planning approaches, and tools to help implement the far-reaching 2012 Mexican housing and urban development policy. A companion governance report *Building Better Cities with Strategic Investments in Social Housing* explores how various levels of government have implemented housing and urban policies and plans that influence the cost, location, and feasibility of affordable housing development across Mexico. The report was commissioned by INFONAVIT (*Instituto del Fondo Nacional de la Vivienda para los Trabajadores*), a major government-sponsored funder of mortgages for private sector workers. INFONAVIT was interested in how its policies could help create a more stable housing market and better towns and cities.

The report identifies four key strategies focused on creating communities that are more sustainable and inclusive.

1. Those wishing to **densify existing metropolitan areas** can use a variety of policies and programs aimed at increasing development in the urban area as a whole (including the core cities and suburban parts). These include simplifying infill developments, promoting public acceptance of infill, and promoting accessory apartments. Together such strategies promote densification at a variety of scales and deal with physical, regulatory, and organizational issues.
2. Accommodating all growth in existing urban areas is difficult in most parts of the world. **Improved approaches to developing greenfield sites** are necessary. Key strategies include creating



Metropolitan Densification

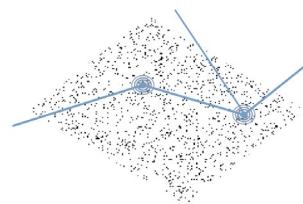


Greenfield Development

additions to urban areas that are rich in infrastructure and services and using innovative designs to comprehensively develop neighborhoods and new towns.

3. **Strategies to retrofit existing areas** respond to concerns about existing developments. Upgrading areas where services and infrastructure are lacking and dealing with abandoned housing are both vitally important. Adding mixed-use, multi-functional neighborhood and town centers to developments and providing better links to jobs can connect people to services and reduce the sense of isolation often found in new developments.
4. A key barrier to making positive changes in metropolitan areas is the issue of **data coordination and developing indicators of success**. The companion *Building Better Cities* report analyzes existing policy and political challenges for marshaling coordination to promote densification strategies in key Mexican metropolitan regions. Data and information sharing is a key challenge. To understand the effects of such policies, programs, and strategies, it is important to develop **measures or indicators of success**. Indicators can provide feedback on the process and interim achievements, helping recalibrate and improve actions.

These policies and programs are not only useful for Mexico but are more broadly applicable in middle and higher income countries trying to meet housing demand while minimizing the negative effects of urban sprawl.



Retrofitting Existing Areas



Data Coordination

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# Abbreviations

<b>CONAVI</b>	Comisión Nacional de Vivienda, ENG: National Housing Commission
<b>DC</b>	Desarrollos Certificados, ENG: Certified Developments
<b>FONHAPO</b>	Fideicomiso Fondo Nacional de Habitaciones Populares, ENG: National Trust for Popular Housing
<b>FOVISSSTE</b>	Fondo de la Vivienda del Instituto de Seguridad y Servicios Sociales de los Trabajadores del Estado, ENG: Housing Fund of the Institute of Security and Social Services for Workers of the State
<b>INFONAVIT</b>	Instituto del Fondo Nacional de la Vivienda para los Trabajadores, ENG: National Worker's Housing Fund Institute
<b>LOS</b>	Level of Service
<b>OREVIS</b>	Organismos Estatales de Vivienda, ENG: State Housing Organizations
<b>PCU</b>	Perímetros de Contención Urbana, ENG: Urban Containment Boundaries
<b>PROCURHA</b>	Programa de Consolidación Urbana y Habitacional, ENG: Urban and Housing Consolidation Program
<b>SEDATU</b>	Secretaría de Desarrollo Agrario, Territorial y Urbano, ENG: Secretariat of Agrarian, Territorial, and Urban Planning
<b>SEDESOL</b>	Secretaría de Desarrollo Social, ENG: Secretariat of Social Development
<b>SHF</b>	Sociedad Hipotecaria Federal, ENG: Federal Fiduciary Fund
<b>TIF</b>	Tax increment financing
<b>TOD</b>	Transit-oriented development
<b>SNIIV</b>	Sistema Nacional de Información e Indicadores de Vivienda, ENG: National System of Housing Indicators and Information

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# Revitalizing Places - Revitalizando Ciudades

**What kinds of urban planning and design interventions can help improve housing and urban development practice in Mexico and successfully implement the new national housing policy? How can metropolitan areas be redeveloped and expanded more efficiently and equitably using housing as a key tool?**

In December 2012, the Mexican government embarked on an ambitious policy reform plan with the objective of defining the upcoming term's agenda and increasing the country's competitiveness and economic growth potential. Reforms touched on numerous sectors including energy, labor, telecommunications, monetary, finance, and education (OECD 2015, 17). Within these reforms, housing and urban policies play a key part. This report, sponsored by INFONAVIT (*Instituto del Fondo Nacional de la Vivienda para los Trabajadores*) —a major government-sponsored funder of mortgages for private sector workers— is a response to those new policies seeking to align mortgage lending with larger policy aims.

The National Urban Development Program 2014–2018 (PNDU), part of this reform plan, represents a shift from previous federal policies moving toward more compact and sustainable urban models. This far-reaching policy establishes six objectives:

1. Control urban expansion and consolidate cities to improve their inhabitants' **quality of life**.
2. Consolidate an urban development model that creates well-being for the citizens, securing social, economic, and environmental **sustainability**.
3. Design and implement normative, fiscal, administrative, and control instruments for **land management**.
4. Promote a **sustainable mobility** policy that ensures the quality, availability, connectivity, and accessibility of urban trips.
5. Avoid human settlements in risk areas and reduce the **vulnerability** of urban populations to natural disasters.

6. Consolidate the National and Regional Development Programs to strengthen **local capacities** (PNUD 2013, 1).

Paralleling the aims set forth in the PNDU, the National Housing Program 2014–2018 established the following objectives to guide the current administration’s housing sector agenda:

1. Provide decent housing (*vivienda digna*) for Mexicans.
2. Responsibly address the housing deficit.
3. Transition to a smarter, more sustainable urban development model.
4. Improve inter-institutional coordination (OECD 2015, 17).

In this new policy environment, the federal government created a new federal ministry: the Secretariat of Urban, Agrarian, and Territorial Development (SEDATU), a national-level planning agency in charge of coordinating and carrying out the urban, regional, and housing vision established in the National Program of Urban Development and its related activities. To follow the objectives of the PNDU the new SEDATU, through the decentralized National Housing Commission (*Comisión Nacional de Vivienda* —CONAVI), is developing and coordinating public efforts focused on consolidating housing near existing urban areas and also extending quality housing to more Mexicans including those from lower income groups.

As a public entity, INFONAVIT is interested in how to help fully implement these new policies and how to promote innovations that will foster a stable housing market. According to the OECD’s report *Transforming Urban Development and Housing in Mexico*, by 2012 roughly 78% of the total housing mortgages in the country were provided by INFONAVIT (2015, 15). While there are many informally built homes in Mexico—roughly 78%—the formal sector is increasingly important (OECD 2015, 15). See “The New Housing and Urban Development Policy and the Revitalizing Places Report” on page 14 for more detail. This means INFONAVIT is a key player in implementing the new national policy, given it can lend to support it.

## The New Housing and Urban Development Policy and the Revitalizing Places Report

Since its founding in the early 1970s, INFONAVIT, along with FOVISSSTE, has been the primary mortgage agency for Mexican workers. By nature of its role and responsibilities, the work of the institute has gone hand-in-hand with major legislative changes and other reforms. The timeline included on the following pages (Figure 1) shows a number of milestones in housing policy against the backdrop of steady urbanization and housing production in Mexico.

In the early part of this century, the Mexican government developed a new strategy to provide more formal housing for low-income workers. Workers in the formal sector were contributing 5% of their salaries to the government-sponsored agency, INFONAVIT, to be used for housing, but rarely saved enough to use it. The government changed its programs to make it easier for lower income workers to access these mortgages that were to be used for new housing units, with significant increases in federal government subsidy programs (JCHS 2012, 6). Housing developers around the country worked to supply these new credits, producing housing affordable to lower-income workers. This was often achieved by developing very small units, or locating them further from the existing urban area on peripheral and inexpensive land, thus initiating a growing urban sprawl problem (JCHS 2012, 21).

Hundreds of thousands of units were built. Over time problems appeared: abandoned units, poor construction quality, or residents commuting long distances to work. Some residents bought units not intending to live in them but rather to access their savings. Inflexible rules that did not allow mortgages to carry over when a worker moved house exacerbated this problem (JCHS 2012, 21-22).

By 2012, when a new government was elected, it became clear that there needed to be changes both in the way mortgage programs were administered and in the overall planning of metropolitan areas. Under the current administration's National Housing Program (Programa Nacional de Vivienda, 2014–2018) and the National Development Plan (Plan Nacional de Desarrollo, 2013–2018), the far-reaching policies of recent years are both

visionary—promoting compact, sustainable, and affordable cities—and also difficult to implement. In response to these policy changes, the housing development industry has restructured—with three large developers going bankrupt—and smaller and medium-sized developers taking their places (Reuters 2013; Valle 2014). Development has also been uneven, with better-located housing development fostered in some locations and grinding to a halt in others where developers were challenged to find available developable land that would be eligible for subsidy.

The *Revitalizing Places* report draws on international experience to provide ideas about how to promote high quality social housing and continue to combat the challenges that accompany urban sprawl and uneven development. The companion report, *Building Better Cities with Strategic Investments in Social Housing*, delves into how the housing and urban development policies could be better implemented on the ground through more effective coordination, partnerships, and innovative projects.

**INFONAVIT retained Harvard University's Graduate School of Design (GSD) in a three-year project to advise on strategies for implementing the new housing policy. The GSD's project answers four key questions:**

1. What kinds of regulatory and technical tools, or other urban planning and design interventions, can be used to improve practice and successfully implement the new national housing policy?
2. What levels of government would have to embrace such tools and how can they be mobilized?
3. What are the challenges in coordinating the new national housing and urban policies with state and local government actions?
4. How can different levels of government work together to produce and renovate social housing in urban Mexico?

This report focuses centrally on the first and second questions, drawing on a substantial set of international and Mexican experiences. However, it has implications for all four components of

the research. The companion governance report addresses the third and fourth questions. Both reports draw on fieldwork in seven cities and over 250 interviews in Mexico, and a substantial review of international experience. In addition, the Harvard research team documented conversations with over 100 Mexican policy makers, who were engaged in capacity-building workshops.

The report outlines four key types of programs and policies that have been used internationally to foster the kind of urban development that is proposed in recent Mexican policies. These include:

1. **Densifying** existing areas at the metropolitan, local, and site scales.
2. Improving **greenfield** development by fostering infrastructure-rich additions or new sustainable designs.
3. **Retrofitting** existing places by upgrading services and infrastructure, creating mixed-use centers, or linking jobs to housing.
4. Increasing **coordination** between governments by sharing data and information and measuring indicators of success.

The first three program types focus on key concerns raised in the body of literature on promoting better urban development. They have also been mentioned in reports published in recent years by well-known national housing research centers such as the Foundation of the Center for Housing Research and Documentation (CIDOC) and international agencies such as OECD.

## Key Challenges

While the new policies represent a comprehensive and forward-looking approach, international and Mexican experience highlights a number of key challenges.

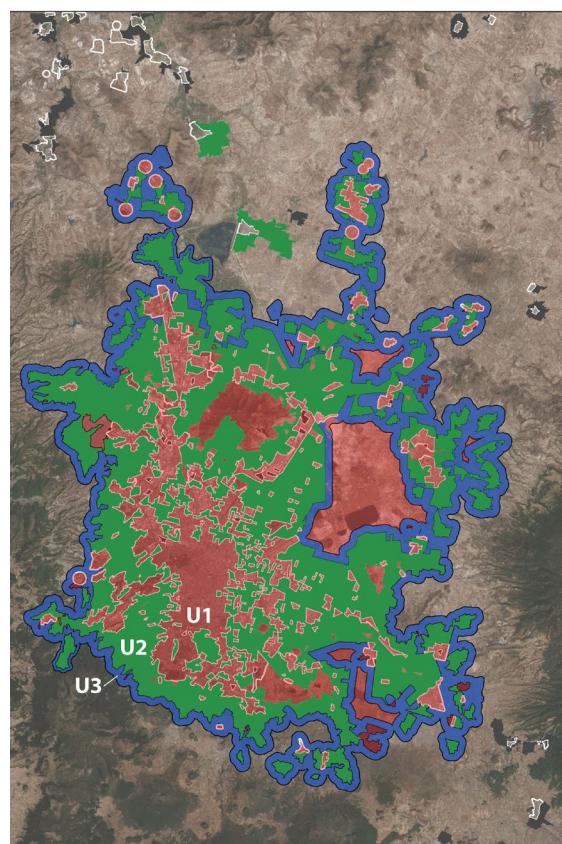
**Densifying existing areas:** The signature strategy of the new national housing and urban development policy is to create **urban containment boundaries** (Perímetros de Contención Urbana, or PCU) around each metropolitan area in Mexico and encourage much more development in existing areas (called **infill development**).

These urban containment boundaries (PCUs), developed by the National Housing Commission (CONAVI), are a policy tool of the Federal Government to identify where to subsidize housing so it

is located within access to jobs, services, and infrastructure. (See description of the urban containment boundaries below in **Section 1.1.1—Greenbelts**). The section on densification places this strategy in a wider context of international approaches that increase densities of metropolitan areas. Such policies are beneficial overall—saving land, using infrastructure efficiently, and making dynamic urban places. However, they take time to implement. Densification plans need complementary programs and policies to ensure denser areas are well-located, maintain sufficient land supply, simplify the urban infill process, and foster infill at a range of scales from single units to larger developments. Such programs require substantial coordination between government agencies.

**Improving greenfield development:** While the new policy approach in Mexico places great emphasis on urban infill, it is extremely challenging to meet housing demand purely though that method. Infill sites are typically expensive and small, permitting is time consuming, legal issues are constraining, and design is complex. As greenfield sites will continue to play some part in housing supply, making these new developments more efficient, better serviced, and more environmentally sensitive is a key issue for the future of urban Mexico.

**Retrofitting existing places:** Even with better infill and improved greenfield development, there remain problems with existing developments. In particular, Mexico has a large number of recently built housing areas, many funded by mortgages from INFONAVIT. Many are poorly located with few services, and abandoned housing is also a problem. A key challenge is to upgrade the infrastructure in these areas, retrofit these developments into whole communities adding community or town centers (with schools, shops, and services), link the developments to jobs, and deal effectively with already abandoned housing.



Map of urban containment boundaries in a typical metropolitan area.

*Source: Data from CONAVI*

*Diagram by Irene Figueroa Ortiz*

**Increasing data coordination and measuring improvements:** A key barrier for advancing an urban densification agenda is the lack of data coordination. The federal government is strong in terms of powers and personnel, and interested in promoting and funding housing at a national scale. However, implementing the government's visionary and comprehensive policies at the local level is difficult. This is caused, in part, by the multiplicity of interests and administrative responsibilities located at the level of state and local governments.

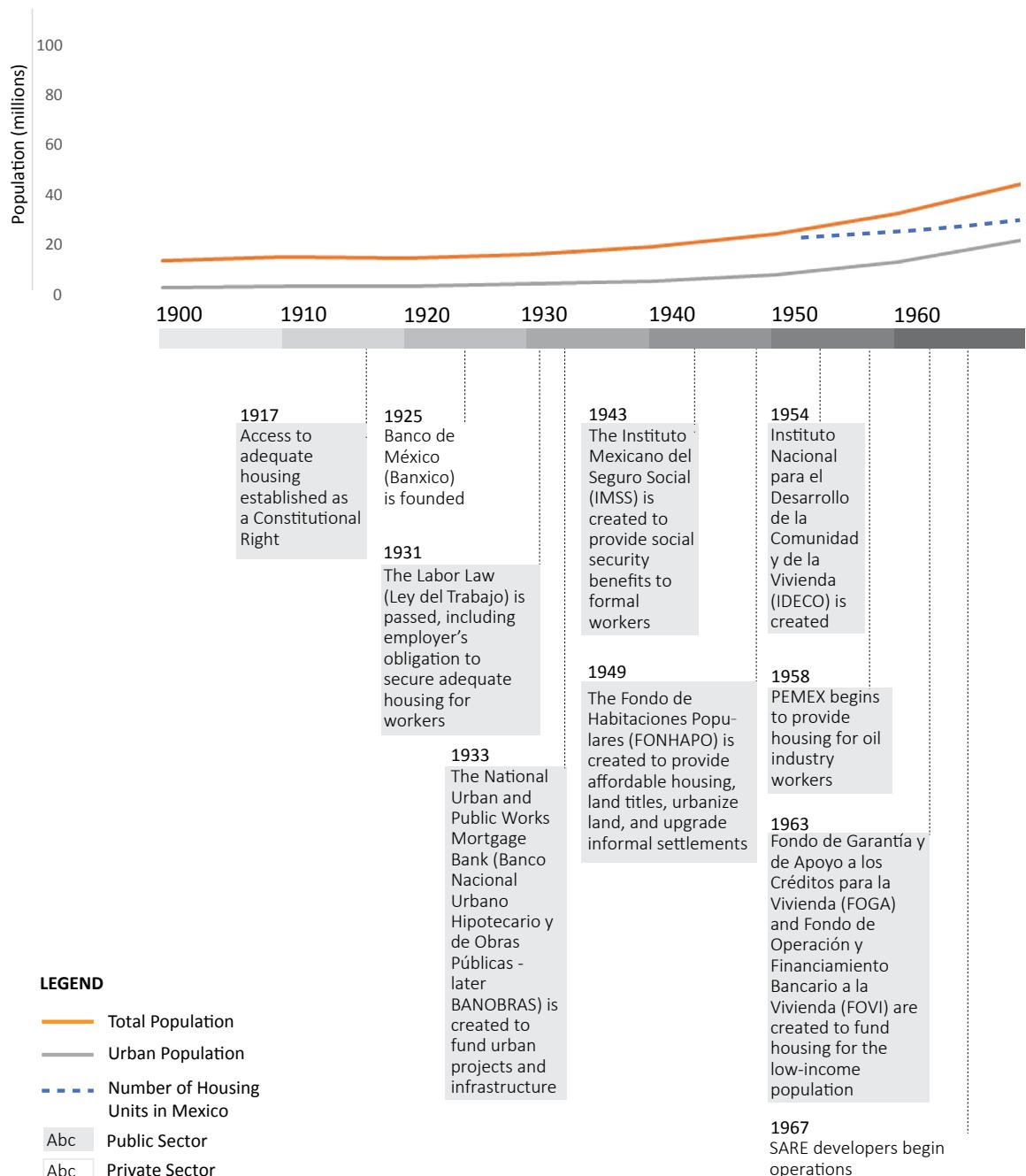
One way of reducing the implementation bottlenecks is increasing the accessibility and availability of accurate information. A major purpose of collecting and sharing data is to assess the current situation and evaluate improvements over time. In Mexico, there has been a great deal of interest in and activity around ways of measuring outcomes. The task is to hone in on which indicators or benchmarks are most useful. Measuring good processes is something also worthy of attention as it can help change course before a program is fully implemented. This section places both kinds of measures in an international context.

## How to Read this Report

Mexico's national housing and urban development policy is far reaching. While Mexico's situation is unique, there is much to learn from international examples that can be adapted and applied to the Mexican context. In addition, countries outside Mexico can learn from Mexican experience.

The report uses examples from both locations—Mexico and abroad—to examine the opportunities and challenges for various approaches to creating social and sustainable housing. Some of these tools can be implemented at a federal level but many are local or metropolitan actions; in these cases the national government can provide support and encouragement but localities need to take action.

- Each of the four main **parts** of the report is divided into numbered sections representing major approaches. For example, **Part 1 on Densifying Existing Areas** includes several key approaches such as Simplifying the Urban Infill Process.
- Each **key approach** is then divided into specific **tools**. For example, under Simplifying the Urban Infill Process, one of the tools is One Stop Shops.
- Each **tool** has similar sections—what it is, how it works, examples where applicable, implications for Mexico, and takeaways or recommendations.
- At the end of each key approach we describe general benefits and challenges and provide conclusions.
- In **Appendix A** we provide a **checklist** of all the takeaways or recommendations organized by tool. This would allow planners, housing professionals, and policy makers to quickly check the state of their local situation.
- **Appendices** provide further **definitions, data** and extended **case studies**.
- While the report can be read from front to back, it is designed more as a reference work so that readers can select the sections that seem most relevant to them.

**Figure 1. Major housing policies, programs, and private developers in Mexico since 1900**

Adapted from:

Sanchez Corral (2012, 11-13); FOVI (1999, 2012); BANOBRAS (2013); Lugo Goytia (1991).

Diagram by Antara Tandon.

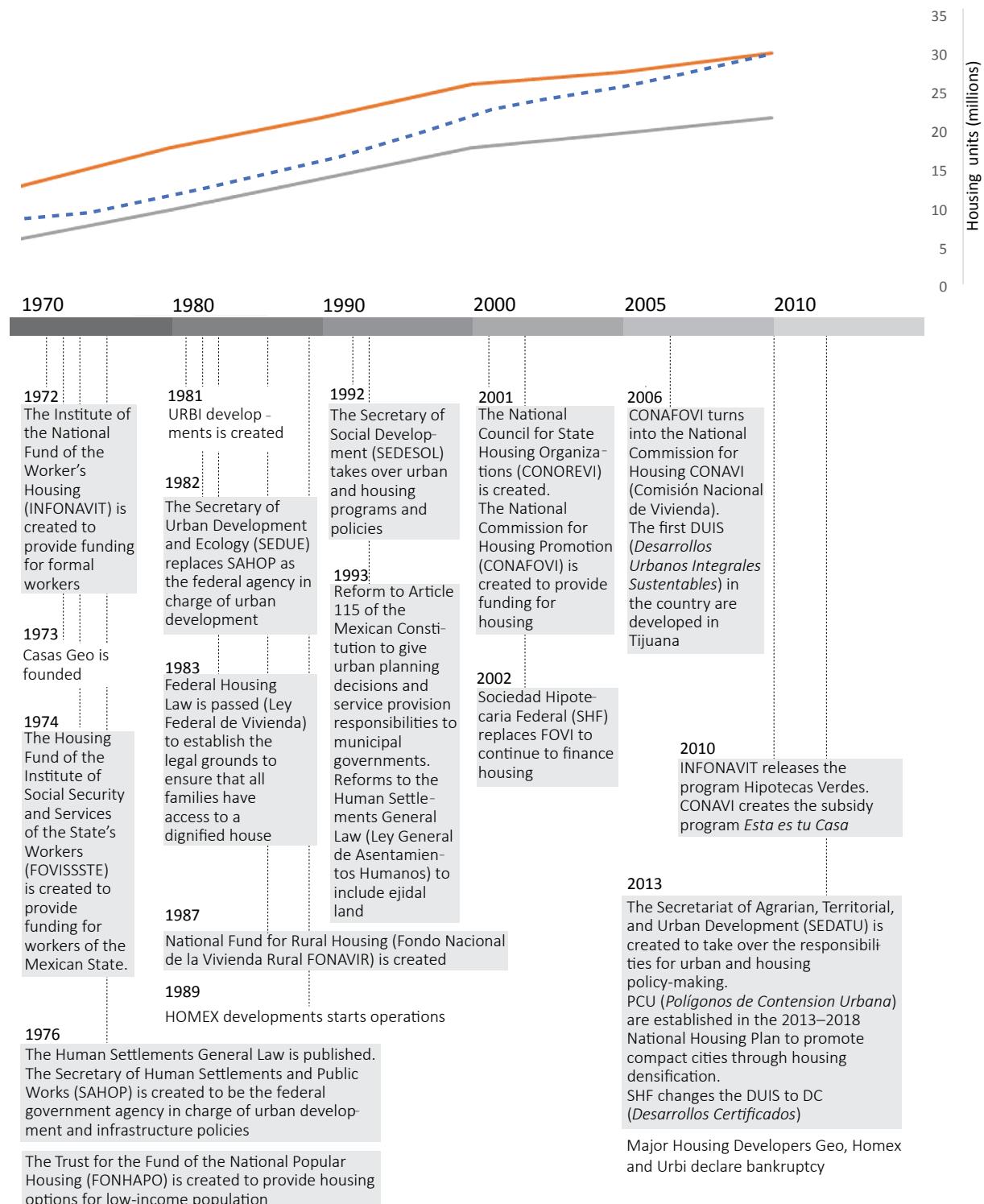




Photo: Irene Figueroa Ortiz



# Part 1

## Densifying Existing Areas



## Part 1: Densifying Existing Areas

According to the United Nations, by 2007 the number of people worldwide living in urban areas exceeded the number living in rural areas. The trend toward urbanization began in the developed world in the nineteenth century with the Industrial Revolution. This trend accelerated globally starting around 1950, when only 30% of people lived in urban areas (United Nations 2014, 7).

However, despite such large increases in the number of people living in urban areas (or cities), the density of urban areas all over the world is on the decline (Angel et al. 2010, 60). This is due to a range of factors that tend to spread people out within urban areas. These include increasing use of motor vehicles for transportation, growing incomes leading some people to want more space, low incomes forcing others to move further from the core city to find cheaper housing, and decentralizing employment encouraging similar movements for workers wishing to live close to jobs. In a few areas decreasing densities are due to declining populations, but these cases are still relatively rare. In a study of city density using aerial imagery and national census information, Angel et al. found that the average built-up population densities of 120 global cities (population of 100,000 or greater) decreased at an annual rate of approximately 2 percent between 1990 and 2000 (Angel et al. 2010, 60).

Urban expansion is thus the main mechanism for this seemingly paradoxical trend of increasing urban populations and decreasing urban densities. Some of this expansion is well-designed, uses land efficiently even if at slightly lower densities than the core cities, and creates pleasant places to live and work. However, other development often referred to as sprawl has more problems. In Mexico such development occurs both through informal strategies and via formal developments. In the recent decade it has been the latter that has grabbed public attention as an earlier government policy increased low cost housing development, often on the urban periphery.

Sprawl has no agreed-upon definition. However some of the characteristics of urban areas labeled as sprawl are listed in **Table 1.1**, including low-density development, auto-dependency, land

**Table 1.1 Commonly cited characteristics of urban sprawl.**

Characteristics of Urban Sprawl
<ul style="list-style-type: none"> <li>• Low residential density</li> <li>• Unlimited outward extension of new development</li> <li>• Spatial segregation of different types of land uses through regulations</li> <li>• Leapfrog development (or development that leaps out onto new land, not connected to existing urban areas)</li> <li>• No centralized ownership of land or planning of land development</li> <li>• All transportation dominated by privately owned motor vehicles</li> <li>• Fragmentation of governance authority over land uses among many local governments</li> <li>• Great variation in fiscal capacity of local governments</li> <li>• Widespread commercial strip development along major roadways</li> <li>• Major reliance on filtering process to provide housing for low-income households. Filtering occurs when wealthier people move into new homes and low-income people move into the older and lower-quality houses left behind.</li> </ul>

Adapted from Neuman (2005, 15), citing Burchell et al. (1998).

use division, and “leapfrogging” development over open land. In some contexts, such as the smog-choked industrial cities of North America and Europe during the 19th century or the overcrowded informal settlements of the contemporary global south, this trend is a welcome relief. However, in general, urban expansion and sprawl create a disproportionate amount of costs for residents and local governments. For example, in a multivariate regression analysis of the expenditures of 3,179 Spanish municipalities in 2005, Benito et al. discovered that municipalities with higher population densities had lower per capita spending on services, presumably because they were more efficient (Benito et al. 2010, 261). Other costs commonly attributed to sprawl include disadvantaged communities in the urban core or the urban fringe, traffic congestion, environmental problems, and loss of farmland (Boyle and Mohamed 2007, 679).

One of the key issues Mexico needs to deal with is to move from a sprawling development pattern to a more efficient one, which will involve both densifying the existing built-up areas and creating better developments nearby.

The causes of sprawl are uncertain and complex. Policies and subsidies at all levels of government certainly play a large role (Knaap et al. 2000, 10). Through a literature review of the effects of federal, state, and local policies on urban sprawl in the United States, Knaap et al. found that policies that influence transportation costs, housing prices on the urban fringe, the financial structure of local governments, and cost of extending infrastructure have the greatest impact. They also acknowledged that economic forces outside the direct control of government play a large role in promoting urban sprawl, such as rising incomes or falling transportation costs (Knaap et al. 2000, 10).

In Mexico, mortgages from the two government

sponsored mortgage agencies INFONAVIT and FOVISSSTE (the public sector worker equivalent of INFONAVIT) certainly have contributed to sprawl by building a substantial amount of units in under-serviced locations, with long commutes to work. While there are many good housing developments in Mexico, policies since the early 2000s emphasized quantity of mortgages over the quality of the unit and location. According to the OECD, in the period between 2006 and 2013 “in 46 out of Mexico’s 59 metropolitan zones, more than 70% of homes registered in the new National Housing Registry (RUV) were built either at the outskirts or the periphery” (2015, 19). What is more, the OECD report elaborates: “roughly 90% of the housing stock consists of individual homes (rather than denser, multi-family residences)” (OECD 2015, 19).

However, government can also play a role in preventing urban sprawl. Globally, strategies that promote densification in urban areas have emerged since the mid-twentieth century with the goal of constraining the outward growth of cities and metropolitan areas and focusing new growth into existing urban areas.

**This chapter gives an overview of four types of programs that help consolidate, intensify, or densify existing areas:**

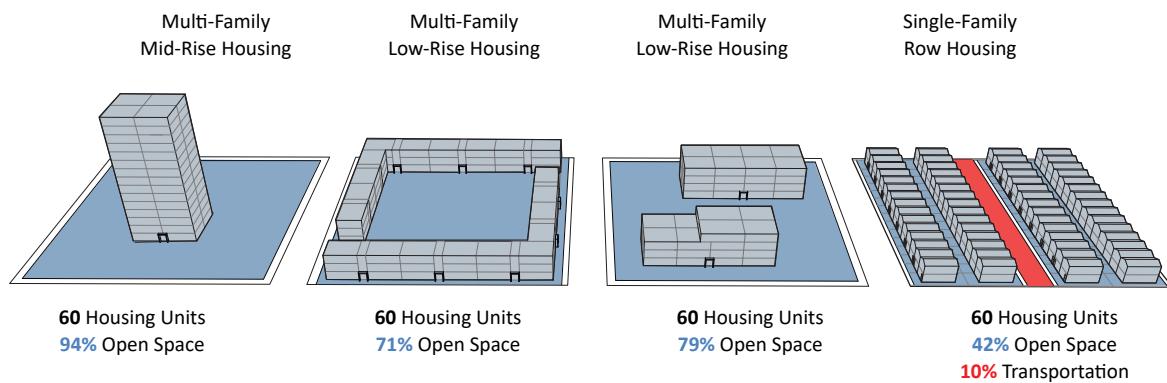
- **Programs and policies that promote densification.**
- **Approaches to simplifying redevelopment processes.**
- **Methods for encouraging acceptance of higher density development projects among city and metropolitan area residents.**
- **Approaches to promoting alternative tenures.**

### **What is densification?**

At its base density refers to the number of residents, jobs, or housing units in a particular area. To increase it, typically more units are built in the same area—for example in taller developments, or splitting large units into smaller ones. It does not mean high rise development—some of the highest density cities have fairly low buildings (central Paris, for example). Thus, increasing density is as much about design and planning—how it is done—as it is about the quantity of units or people (See Appendix B).

Density is often confused with related topics including crowding (people per room) and building lot coverage and bulk (which relate

to design rather than density). Many people fear higher density dwellings will be cramped, lack open space and parking, and even be of lower structural quality. These are all important issues but are not directly related to density. For example, attached units can be spacious with gardens or balconies and ample parking (or alternative transportation). It is important to be very clear about these differences.



The same density of housing can be arranged very differently on the site, creating contrasting environments in terms of open space and building height.

*Diagram by Irene Figueroa Ortiz*





# 1.1 Programs of Overall Metropolitan Densification



## Programs of Overall Metropolitan Densification

### What It Is

- **Densification shifts growth to already developed areas through infill or redevelopment and seeks to slow, constrain, or completely prevent the outward growth of cities.**
- **The sustainable “compact city” is characterized by higher densities, mixed uses, public transit, social and economic diversity, and environmental protection.**
- **Tools such as greenbelts, urban growth boundaries, and urban service areas limit outward expansion of urban areas.**
- **Strategies like density requirements/targets, metropolitan planning, taxation reforms, and reforms of other government policies encourage infill and redevelopment.**

Broadly speaking, **densification strategies, sometimes called urban consolidation**, are planning and policy tools deployed at multiple levels of government that slow, constrain, or prevent the outward growth

Portland, Oregon, uses a growth boundary to limit development to areas with infrastructure. Mexico has a national policy that is quite similar as it limits growth to clearly defined polygons based on the existing urban area and a buffer around it.

*Photo: Cacophony, Wikipedia Commons*

of cities and urban development into peripheral areas. Densification strategies also redirect growth towards already developed urban areas within the city, either by redeveloping unused or underused parcels or by increasing densities in existing areas. Redevelopment, and increased densities specifically, promote containment of the urban area and can help ensure that housing is located centrally near employment and services like schools and shops. On the other hand, these strategies can increase the value of centrally located land, pushing up housing costs and limiting supply. To address this phenomenon, densification must be accompanied by steps to increase production (through infill and higher density expansion) to ensure housing affordability (Boyle and Mohamed 2007, 638).

The **compact city** is a related urban planning and design model that claims to be the ideal form for sustainable cities. Generally, efforts by cities and metropolitan areas to promote densification are made in the hopes of creating this type of city form. Like urban sprawl, the compact city can be defined many ways. **Table 1.2** lists some of the most common characteristics attributed to the compact city, which can include well-designed urban expansion as well as redeveloping existing urban areas.

**Urban containment and growth management** are terms used to describe any policy that seeks to influence the expansion of urban areas through containment or management. In general, these policies make use of “push” and “pull” factors to ensure that a city or metropolitan area will take a particular form (Pendall et al. 2002, 4). Push factors refer to strategies such as greenbelts and urban growth boundaries, which restrict where new development can occur on the fringe of a metropolitan area. Pull factors refer to policies that direct the construction of public infrastructure (such as roads, water, sewerage, etc.) and services to areas that have been identified

**Table 1.2 Characteristics of the compact city model**

Characteristics of the Compact City
<ul style="list-style-type: none"> <li>• High residential and employment densities</li> <li>• Mixture of land uses</li> <li>• Fine grain of land uses (proximity of varied uses and small relative size of land parcels)</li> <li>• Increased social and economic interaction</li> <li>• Contiguous development</li> <li>• Contained urban development, demarcated by legible limits</li> <li>• Efficient urban infrastructure, especially sewerage and water mains</li> <li>• Multimodal transportation</li> <li>• High degree of local/ regional accessibility</li> <li>• Substantial street connectivity, including sidewalks and bicycle lanes</li> <li>• Significant impervious surface coverage</li> <li>• Low open-space ratio</li> <li>• Unitary control of planning and land development, or closely coordinated control</li> </ul>

*Adapted from Neuman (2005); citing Burton 2000; Galster et al. 2001; Song and Knaap 2004.*

as appropriate for development (Pendall et al. 2002, 5).

In all these strategies government and developers must also address the concerns of local residents, whose objections to higher density projects often have the effect of extending the time it takes a project to work its way through regulatory review processes, greatly affecting the costs to private developers (Forsyth et al. 2010, 270). Experiences from other metropolitan areas, such as Sydney, Australia, suggest that this process is often quite difficult (**For more detail about the Sydney example see the case study in Appendix D**).

**The following sections describe each of the containment and densification strategies mentioned above in more detail, providing examples of their application in Mexico and internationally.**

- **Greenbelts**
- **Urban growth boundaries and urban service areas**
- **Density requirements**
- **Strong metropolitan planning agencies**
- **Changes in property taxation**
- **Transfer of development rights**
- **Alignment of government policies and programs**

### 1.1.1 Greenbelts

**What it is:** A greenbelt consists of a band of protected open space surrounding a city or larger metropolitan area in which new development is prohibited or severely restricted.

**How it works:** Governments prevent new growth in the greenbelt through legal or regulatory barriers, effectively prohibiting urban development (although continued use of farmland may be allowed, for example) (Pendall et al. 2002, 18). Greenbelts tend to be static barriers to outward growth, and thus, very effective. However, they can be difficult and expensive to implement, requiring government to purchase land or development rights (Pendall et al. 2002, 18). In addition, unless there is a concerted effort to increase density within, the greenbelt will not stop development, but displace it to areas outside of the greenbelt, a phenomenon known as leapfrog development.

**Example:** Since the late 1950s, a number of voter approved policies and tax increases have enabled the city government in Boulder, Colorado to purchase open space surrounding the city in order to prevent the growing municipality from sprawling, thus preserving valuable recreation and

environmentally sensitive areas. However, at the same time, the municipality began implementing policies to limit new development within the city, creating a dramatic imbalance between the supply and demand for new housing. As a result, new growth occurred in jurisdictions outside of the greenbelt, in areas with few or no anti-sprawl regulations. So while the city was successful in creating a greenbelt and reserving lands in its periphery, it resulted in new, unsustainable growth in areas outside of the greenbelt. In addition, many of the residents of these new suburbs commute into Boulder for work, promoting automobile use and creating traffic congestion issues (Pendall et al. 2002, 19-20).

**See Appendix D for an example from Seoul, South Korea.**

### Greenbelts: Implications for Mexico.

Through the urban containment boundaries or “PCUs” (technically growth boundaries), the Mexican government has created de facto greenbelts around all metropolitan areas. This has implications for housing affordability, as the restrictions on development in designated areas may drive up housing prices significantly or propel sprawl elsewhere. Implementing greenbelts may prove particularly challenging in Mexico because coordinating local and state governments in both assembling and acquiring land to be protected or reserved as part of a greenbelt strategy may prove too costly without federal funding or support.

#### Takeaways:

- Greenbelts are a viable strategy for growth control but must be combined with adequate policies, primarily by providing land for development within the area surrounded by the greenbelt and restricting leapfrog development or channeling it into well-serviced growth centers.
- Without proper policy alignment, greenbelts



England widely adopted the use of green belts to contain urban development. The distinction between green area and development is clear.

*Photo: The Telegraph*

will only exacerbate sprawl and increases in housing prices.

- Greenbelt strategies typically require regional or state-level government to coordinate multiple municipalities.

### 1.1.2 Urban Growth Boundaries and Urban Service Areas

**What it is:** Urban growth boundaries (or UGBs) create a regulatory barrier to development outside of a designated area. Urban service areas seek to encourage development in a city or metropolitan area in certain locations over others through the provision of municipal infrastructure and services.

**How it works:** Within urban growth boundaries, urban land uses are allowed to occur, while outside of the boundaries, land is restricted to rural and other non-urban uses. Because this boundary is not a physical one, it can be adjusted or expanded based on certain metrics, thresholds, or a community's preferences. Unlike greenbelts or urban growth boundaries, urban service areas do not necessarily seek to prevent development from occurring (Pendall et al. 2002, 20-25). Instead, they are more concerned with providing public infrastructure and services in a planned and orderly manner and focusing development in serviced areas.

**Example:** State laws in the U.S. State of Oregon require all cities and the metropolitan government of Portland to create urban growth boundaries. These boundaries must contain enough buildable land to last for 20 years—typically calculated with estimates of growth rates and development densities. Once the supply of land dips below this threshold, the city or metropolitan area must expand the growth

boundary until it again contains a supply of buildable land for at least the next 20 years (Metro 2015).

**Example:** Mexico's equivalent of a UGBs strategy is the program of **Urban Containment Boundaries**. In 2013, the National Housing Commission (CONAVI) developed the Urban Containment Boundaries or *Perímetros de Contención Urbana* (PCU) to help channel federal housing funding to consolidated urban areas with access to services, jobs, urban amenities, and transport. These boundaries were designed with geospatial information from the National Institute for Statistics, Geography, and Information (INEGI). The boundaries are broken down into three types according to their location in respect to urban centers, population, and coverage of basic services (CONAVI 2015):

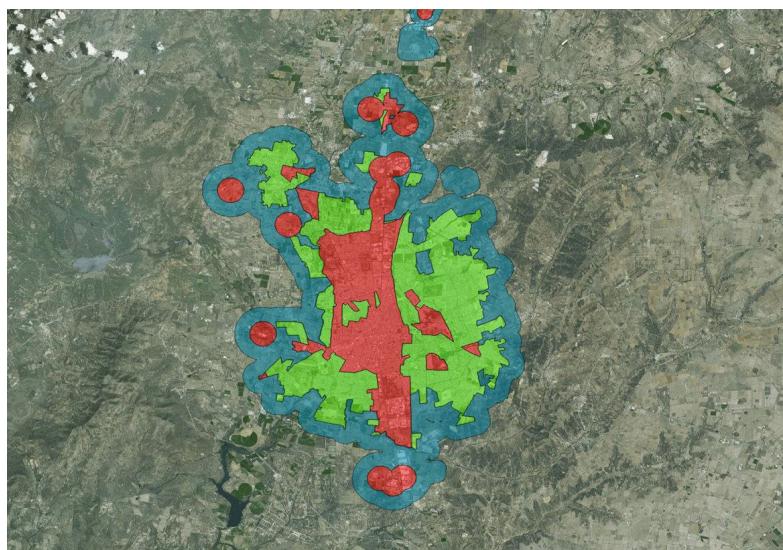
- **U1- Intraurban:** Defined with the variable of proximity to employment, defined as the physical distance to jobs in a given geographic unit.
- **U2 - First boundary or areas in the process of consolidation:** Areas with water and sewage service coverage greater than or equal to 75%.
- **U3 - Second boundary or contiguous urban areas:** Areas located next to U2s in a buffer defined according to the size of the city.

### **Urban growth boundaries and urban service areas: Implications for Mexico.**

As noted above, the Mexican urban containment boundaries (PCUs) act as growth boundaries, in this case specifically for housing developments that receive federal mortgage subsidies or are eligible for purchase with mortgage credits. Though the PCUs developed by CONAVI are an important first step toward providing better serviced housing, it is critical to ensure that adequate land and well equipped infrastructure match these designated boundaries, and that lands designated in the most central or accessible areas (designated as U1 in the PCUs, for example) are accompanied with sufficient subsidies or incentives to support infill and densification on those lots or sites.

#### **Takeaways:**

- UGBs and urban service areas allow a city or metropolitan area more flexibility in guiding development than greenbelts, as well as preventing the creation of satellite towns or cities outside of the boundary.

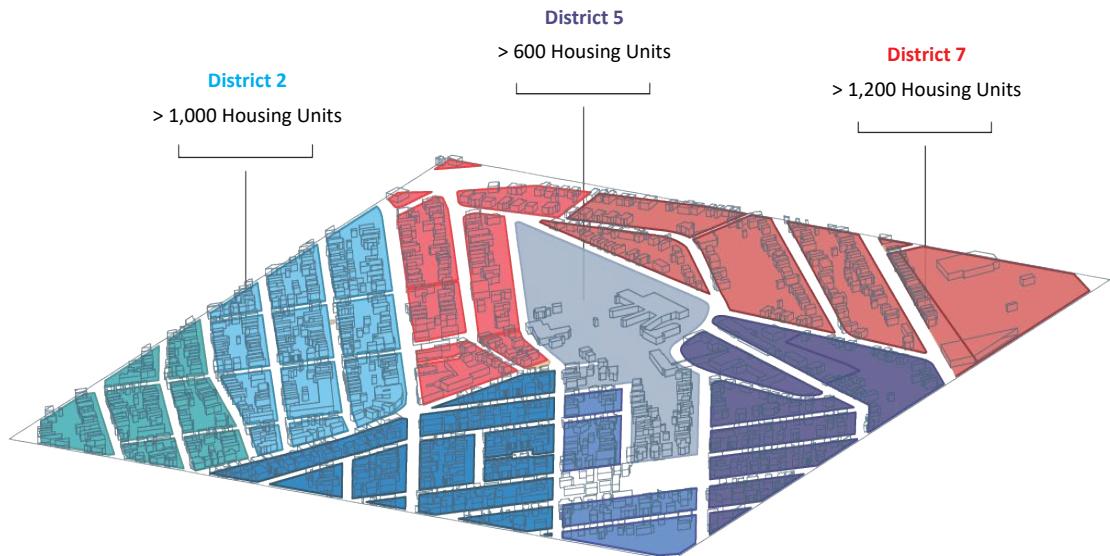


Top: Aguascalientes was planned within 3 beltway loops in order to contain the development of the city.

Diagram by Irene Figueroa Ortiz

Left: Urban containment boundaries (PCUs) in the city of Aguascalientes. U1-intraurban (red), U2-First boundary (green), U3-Second boundary (blue).

Photo: CONAVI 2015



- While some housing development inside an urban growth boundary can be lower density, some areas typically must be developed at higher densities (though not necessarily high rise) to keep housing costs down. Housing configurations within UGBs might include small detached houses, row or townhouses, or low-rise apartments.

Example of how an area could be divided in sub-districts in order to establish new density requirements.

*Diagram by Irene Figueroa-Ortiz and Nomin Jagdagdorj*

By linking development with the provision of infrastructure, urban service areas ensure that providing infrastructure and services (which can be very costly) happens at a pace the responsible government can sustain financially, instead of obliging government to provide infrastructure at the rate development occurs (Pendall et al. 2002, 25).

### 1.1.3 Density Requirements

**What it is:** These requirements specify a density for infill and redevelopment projects in order to encourage greater density in targeted locations.

**How it works:** Density requirements are implemented in a variety of ways. Some have **minimum** densities for new development. Others use up-zoning (changing zoning to allow higher **maximum** densities), other legally imposed development standards, or simply recommended guidelines (SPUDD Cape Town 2012, 10). An example of a zoning change to promote density would be allowing

the construction of accessory dwelling units or allowing subdivision of larger parcels into smaller ones to allow for more units (even additional single-family housing). Another approach is to create minimum targets for the amount of new housing that will be built in certain areas of a city or metropolitan area (NSW Government 2013).

**Example:** In its draft *Metropolitan Strategy for Sydney to 2031*, the government of the Australian state of New South Wales seeks to encourage densification through the use of what it calls “housing targets”. The plan divides the Sydney metropolitan area into six different sub-regions, assigning each one a different target representing the number of new housing units that will be built in each sub-region. In addition, the plan assigns minimum density requirements for new residential developments based on how close they are to major centers and nodes. The centers with the best transport connections and the most jobs, shops, and services have higher minimum requirements than smaller nodes with fewer connections (NSW Government 2013, 12).

See also the Sydney case study in Appendix D.

**Example:** In 2015 the municipality of Guadalajara updated its zoning regulations (*planes parciales*) to create higher density areas, reduce parking requirements, and identify vacant sites for social housing. Minimum densities were established in areas next to urban corridors already well-connected with transport and services. When published in early 2015, these regulations were expected to be a positive turning point for the city, which had not updated its zoning regulations since 1993. In spite of this, the approval of the plans met resistance from a group of neighbors (*colonos de vecinos*) whose opposition resulted in a “freezing” of the plans’ approval in the state court system. Major concerns included a loss of the city’s character and increased traffic congestion. Until the state courts make a final decision, private and

public sectors alike are waiting to see how urban development in Guadalajara unfolds. The details of this case are expanded on in the Governance report, but it is important to highlight here the drawbacks of promoting density requirements without necessary community engagement (Davis 2015).

### **Metropolitan or state density requirements: Implications for Mexico.**

Across Mexico, zoning controls are key to successfully implementing infill development and enabling an increased housing supply through densification. This responsibility falls specifically to local governments, and municipalities must be empowered to make informed technical decisions about how to better accommodate densification through appropriate density requirements.

As metropolitan planning agencies are implemented more fully, they can also play a critical role in using coordinated data to help municipalities plan to accommodate growth and density in appropriate neighborhoods or corridors. They can help align other infrastructure projects that may be public (such as public transportation initiatives) or private (major university campus expansions and master planning). Lastly, efforts for increasing density requirements or “up-zoning” in Mexico must also be sensitive to the relative lack of precedents for high density residential development in the country (outside of Mexico City) and could potentially use public participation and other engagement campaigns to ensure greater public support and acceptance (to be explained in greater detail in 1.3 Promoting Acceptance of Urban Infill).

### **Takeaways:**

- Both maximum and minimum densities can be used to structure urban space.
- Density requirements are greatly

strengthened when coordinated with infrastructure plans, especially those dealing with transportation in order to ensure that new development is adequately serviced (Dodson 2010, 488).

- Increasing density around current or future public transit stations (known as transit-oriented development) or activity/town centers are common strategies to channel density.

### 1.1.4 Strong Metropolitan Planning Agencies

**What it is:** Planning policies and frameworks supporting densification can be formulated at a number of levels of government. A growing body of research suggests that metropolitan planning allows for more equitable distribution of resources between cities, suburbs, and rural areas, allows for a comprehensive planning of transport systems, and forces coordination between local governments, allowing for more effective containment policies (Boyle and Mohamed 2007, 685).



New mid-rise housing in a new town center in outer suburban Sydney (Rouse Hill) shows higher density housing in an area with more services.

*Photo: Collection of Ann Forsyth*

**How it works:** A metropolitan plan needs some kind of regional agency which may be created by higher levels of government (e.g. state, national) or as a cooperative agreement among municipalities. It is also necessary for government to decide the amount of detail or specificity metropolitan plans will include. Plans at this level can range in specificity from being conceptual to being like blueprints for future development.

**Example:** In Australia, the national constitution gives state governments the power to make planning decisions. These governments do not need the approval of either the national government or the local governments to implement their decisions regarding the spatial development of metropolitan areas (Searle and Bunker 2010, 164). A past plan for Sydney's metropolitan strategy "specifies the future size, location and role of all sizeable centres, the location of future rail and regional bus routes, inter-modal centres for freight transport, and sub-regional housing and employment targets to be adopted in local planning" (Searle and Bunker 2010, 167). Local plans need to conform to these wider state-initiated policies. The current draft *Metropolitan Strategy for Sydney to 2031* is similar in its level of prescription (NSW Government 2013)(See the Sydney case study in Appendix D). This is a pattern in many locations around the world including Bogotá in Colombia (Irázabal 2009).

#### Strong metropolitan planning agencies: Implications for Mexico.

Creating strong metropolitan agencies is an opportunity for Mexico, where a lack of coordination and communication creates numerous challenges for urban planning and development at the metropolitan level. In locations where one municipality covers most of the metropolitan planning area—for example, Aguascalientes—planning and development

is generally more orderly. In locations with numerous municipalities forming part of the metropolitan planning area—Oaxaca, for example—planning and development is challenging and efforts are frequently piecemeal.

As is documented in the Governance report, negotiating and mediating metropolitan coordination initiatives is complicated given the lack of an urban regulatory framework in Mexico that sets the ground for implementing metropolitan planning. Unlike the case of Australia, metropolitan agencies frequently lack the legal framework or adequate financial support to lead any type of initiative, leaving all projects to be negotiated with municipal governments.

#### **Takeaways:**

- Although challenging to manage, metropolitan planning can allow for greater coordination and equity in planning processes and outcomes.
- Metropolitan planning agencies can offer much-needed resources for smaller cities or municipalities who do not have the technical or financial capacity to conduct urban planning independently.
- The frameworks for metropolitan planning agencies can be complicated to put in place legally, but financial incentives from higher levels of government can help to encourage their creation. For example, to receive federal transportation funding, U.S metropolitan areas need to form a metropolitan planning organization (MPO) that conducts regional transportation planning.

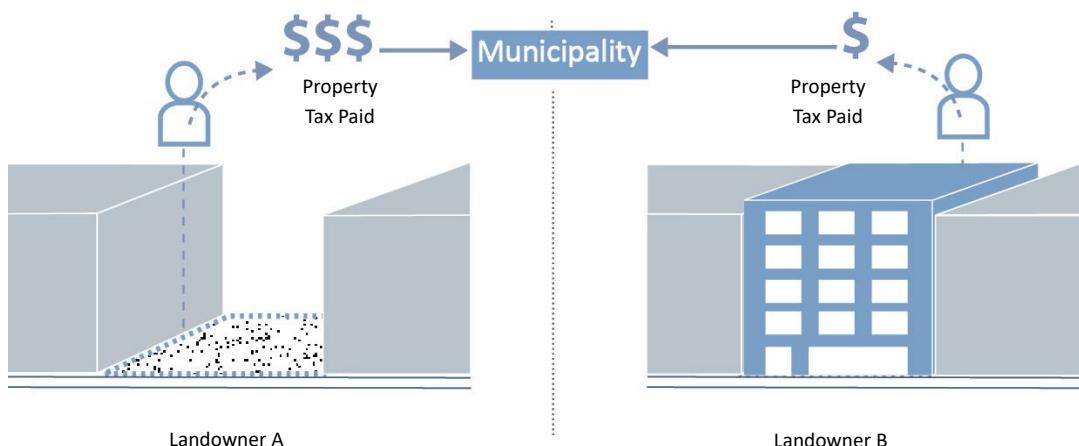
#### **1.1.5 Changes in Property Taxation**

**What it is:** Through its power of taxation, governments at the local and/or state level are able to encourage densification. This is commonly done through a surcharge on vacant or under-

used properties, which sets property taxes at a higher value or rate, encouraging property owners to develop or redevelop their property.

**How it works:** There are a number of ways changes to property taxes can encourage densification. One method is to require the property owner to pay taxes not on the value of the property in its current undeveloped or underdeveloped state, but on the value of the land if it were developed to its full potential as allowed for under zoning and development regulations. Another method is to tax the property at a set, but higher rate than properties that take advantage of the full potential of the land. The rate could increase gradually over time, placing more pressure on properties that have been underutilized longer (CONAVI 2010, 39-40). It is also possible to tax all land at the undeveloped rate so there are no disincentives to develop.

**Example:** Most municipalities in the United States tax property based on the assessed value of the land and any improvements such as buildings on it. This value is taxed at a certain rate, and typically is the primary revenue source for local governments. According to economists, this system of taxation discourages site improvements, since such improvements result in higher tax values and, thus, tax payments (Cho et al. 2008, 4). If this is true, then government policy has created incentives for developers *not* to develop on vacant properties. Economists suggest an alternative tax scheme, known as a land value tax, which taxes property based only on the value of the land, not the buildings or improvements upon it. The result of a land value tax, according to Brueckner and Kim (2003; cited by Dye and England 2010, 11) is to encourage “more structures to be built on a given land area” meaning that landowners are more likely to build at higher densities (Brueckner and Kim 2003, cited by Dye and England 2010, 11).



**Example:** Bogotá, Colombia is one city that has made use of such policies by taxing vacant lands at higher rates. The average property tax rate for all properties in the city is 0.69%. However, vacant sites under 100 m<sup>2</sup> are taxed at a rate of 1.2%, and for vacant land over 100 m<sup>2</sup> the rate is 3.3%. Overall, vacant lands are taxed at an average rate of 2.25%, much higher than the average for all property. In addition, the city taxes suburban lands at a rate 1.6%, further discouraging urban sprawl (CONAVI 2010, 40).

Policies to charge higher taxes on undeveloped land can encourage owners to develop housing. In this example, Landowner A pays more property taxes than Landowner B because the parcel of Landowner A hasn't been developed.

*Diagram by Irene Figueroa Ortiz and Nomin Jagdagdorj*

### Changes in property taxation: Implications for Mexico.

Though frequently discussed, changes in property taxation strategies are very difficult to implement in Mexico given limited capacity of municipal land registration systems and low property tax collection. This may be the case for a variety of reasons, a lack of technical capacity at the local level, a lack of a culture of payment by property owners, or registered land or property values that are well below market value (El Financiero 2014). On the technical side, many municipalities rely on non-spatialized or non-mapped property records in the planning process, greatly challenging their ability to keep records updated and to assess property taxes accordingly.

According to the OECD, in Mexico property taxes represent only 0.22% of the total GDP of the country, compared to 3.02% in the U.S. and 3.72% in France (El Financiero 2014). Given sovereign municipal authority in Mexico, and a widespread need for greater municipal revenue, this is a significant missed opportunity. Updating the cadaster system—the registry of property location, value, and ownership—is a critical strategy for municipalities to capture more revenue via property taxation and to be able to apply fines to promote densification.

### Takeaways:

- Differentiation in the level of property tax for underused or vacant properties is a mechanism that can help governments to encourage development in targeted locations.
- As with many density strategies, differential property taxes rely heavily on a robust property taxation and cadaster or property registration system.

### 1.1.6 Transfer of Development Rights

**What it is:** Transfer of development rights (TDR) policies allow developers or property owners to transfer their right to develop an amount of units or at a certain density from one property to another. This is useful in the case of areas where redevelopment to the full allowable density is difficult (e.g. due to the cost of demolition or construction) or undesirable (e.g. to preserve historic buildings or farmland).

**How it works:** TDR programs usually require the establishment of “sending” zones and “receiving” zones. Sending zones are areas of a city or metropolitan area in which development is to be discouraged, because the area holds special historic or environmental value, while receiving zones are areas identified as suitable for more intensive development, normally in existing urban areas. TDR allows owners of properties in the sending zones to sell their right to develop their properties to land owners or developers of properties in the receiving zones, thereby preventing development in sensitive areas, while at the same time promoting higher density development in appropriate areas. It is possible to have a TDR program without specified sending zones, instead providing all property owners in a city or metropolitan area with the opportunity to transfer their development rights to receiving zones (CONAVI 2010, 56-57).

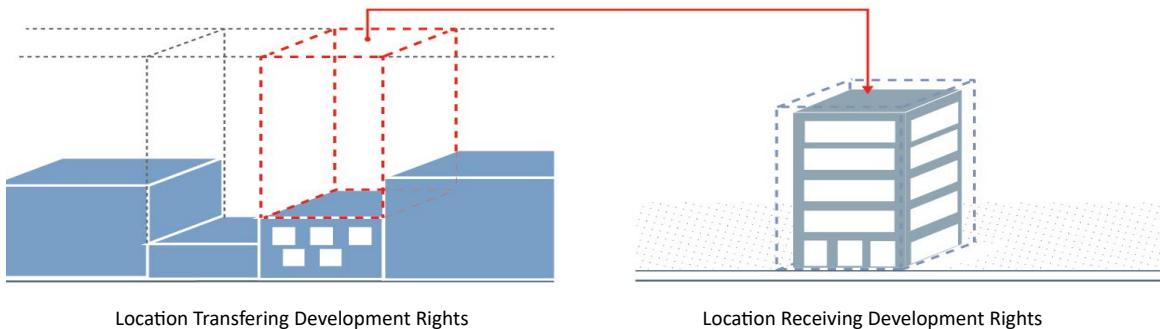
**Example:** In 1985 the City of San Francisco in the U.S. implemented a TDR program where historic properties in the downtown area could sell their development rights to non-historic buildings. The objective of the TDR program was to protect the downtown from the loss of character caused by an increased number of new offices, retail centers, and housing developments. The tool used for supporting the projects was FAR (floor area ratio). FAR is the ratio of the gross building area to that of the parcel. In this way, contributing buildings could sell their unused FAR to other buildings to allow them complement their own, while respecting building height and bulk limits (San Francisco Planning Department 2013).

### Transfer of development rights: Implications for Mexico.

Because of the preservation of Mexico's historic urban centers (regulated in part by the National Institute for Anthropology and History, INAH) and environmentally sensitive areas, land supply is greatly reduced in certain regions. Transfer of development rights (TDR) programs could help increase development opportunities in well-serviced locations nearby, maintaining cultural and environmental protections. It bears noting, however, that TDR programs rely heavily on well-implemented density regulations through strict zoning that takes into account maximum allowable heights and densities. Such regulations would need to be implemented in Mexican municipalities in order to enable developers to transfer development rights to other zones.

### Takeaways:

- TDR policies allow an overall level of development (number of units or area of building) to be achieved within a designated area.
- The main problem is ensuring that the “receiving areas” have capacity to take the additional development, e.g. adequate



infrastructure and neighbors amenable to such development.

- Good design that is sensitive to the context can help solve some of these issues.

### 1.1.7 Alignment of Government Policies and Programs

**What it is:** Alignment of government policies and programs involves bringing together multiple levels of government around shared goals, such as the spatial development of cities and metropolitan areas (Knaap et al. 2000).

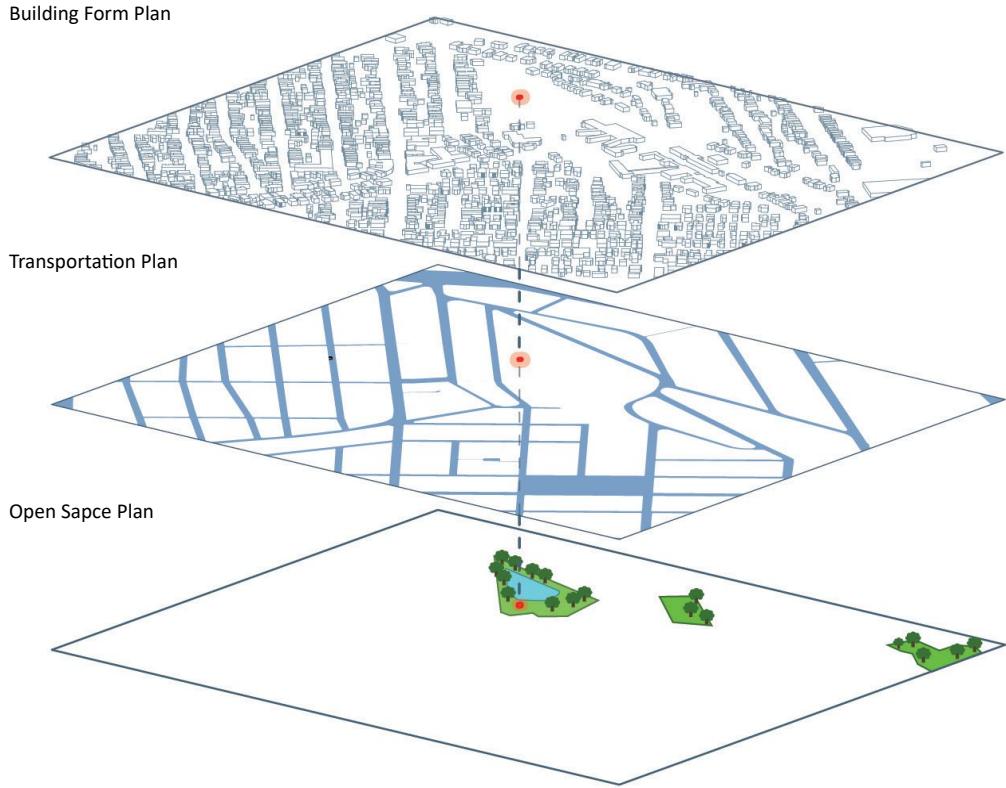
Transfer of development rights programs allow owners in the “sending” zone to sell their development rights to owners in the “receiving zone.” This is useful in places where there are overall development targets but some locations have high historical, ecological, or agricultural value.

*Diagram by Irene Figueroa Ortiz*

**How it works:** If all levels of government, and the programs and policies promoted by each, are not aligned towards encouraging densification and discouraging urban sprawl, densification policies will be less effective. There are many ways in which government can influence different behaviors among its citizens. To the greatest extent possible, these policies should be coordinated to discourage problematic growth such as sprawl. Such policies include those that influence transportation costs, housing prices on the urban fringe, the financial structure of local governments, and cost of extending infrastructure (Knaap et al. 2000, 10).

**Example:** Many locations are trying to align policies and programs to promote sustainability, coordinating land use, transportation, natural resource preservation, economic development, and social programs. These often involve multiple levels of government. There are numerous cases around the world.

One case in a highly decentralized country is the Sustainable Communities Initiative in the United States. This is a collaboration



of the U.S. Departments of Housing and Urban Development, Transportation, and the Environmental Protection Agency. The initiative provides grants to metropolitan areas to work on regional and local cooperation while also advancing policy alignment among federal agencies (HUD 2015). This is a process of providing resources for cooperation in strategic areas for the federal government such as: providing transportation choices, promoting equitable and affordable housing, enhancing economic competitiveness, supporting existing communities, coordinating and leveraging federal policies and investment, and enhancing communities and neighborhoods (Partnership for Sustainable Communities 2015).

Effective and successful implementation can be achieved through coordinating of different plans in areas such as buildings, transport, open space.

*Diagram by Irene Figueroa Ortiz and Nomin Jagdagdorj*

### Alignment of government policies and programs: Implications for Mexico.

Alignment of policies and programs is challenging in Mexico and greater coordination could be beneficial for all levels of government. Federal government could play a particularly useful role in providing greater incentives, channeling funding, and ensuring evaluation for

metropolitan coordination at the local level.

While SEDATU, INFONAVIT, CONAVI, and related housing and urban development agencies are increasingly integrated, reaching out to other agencies and departments would make this far stronger, for example the Secretary of the Treasury and Public Credit (SHCP), the Secretary of Economy (SE), and the Secretary of Communications and Transport (SCT).

#### **Takeaways:**

- Aligning policies can help to reduce unintended consequences and allow for more coordinated and effective leveraging of government resources.
- This alignment presents political challenges, as different policies often reflect the needs of different constituencies and the priorities of various government entities. National governments can foster alignment by making it a condition of funding.

#### **Benefits and Challenges of Overall Programs of Metropolitan Densification**

Densification policies have the potential to reduce municipal costs, improve transportation times and costs, increase energy efficiency and reduce greenhouse gas emissions, preserve land and protect the environment, increase the diversity of housing types available, and create environments that encourage good human health. These benefits can be difficult to realize for a number of reasons, whether due to challenges of coordination between governments, community opposition, overloaded infrastructure and congestion, the lack of developable land, housing and land price increases, consumer preferences, or market forces.

Additionally, density as a measurement is vague and varies greatly depending on how it is defined. For this reason, there is a general lack of academic consensus about the specific benefits and costs

of densification policies. The table included here is a summary of the literature on densification and represents a variety of viewpoints. **It should be noted that not all the potential benefits and challenges have been proven, although we have tried to minimize the least substantiated claims in Table 1.3. In addition, many problems can be mitigated with better design.**

As **Table 1.3** demonstrates, densification and the compact city model have the ability to provide real benefits to a city or metropolitan area. These benefits range from decreased municipal costs to increased usage of public transportation. Nonetheless, a number of urban planners and policymakers have identified costs or challenges to the implementation of such policies. These include the potential for increased congestion in central city areas, rising land or housing prices, or community opposition.

The following section takes a more in-depth look at some of the benefits featured in **Table 1.3**. While it primarily discusses the benefits of implementing densification policies, it is important to keep in mind that increasing density is not a panacea for all urban problems. As the table illustrates, there are potentially some real costs to densification that should be considered carefully. Furthermore, densification policies are often challenging to implement, especially across systems of governments that place land use planning powers at the local level (as in Mexico) or distributed across varying levels of government. In such contexts, coordination becomes a key part of any densification strategy.

**Table 1.3 Potential benefits and challenges of higher density development from various viewpoints**

Subject/Topic	Benefits of Higher Density	Challenges of Higher Density
<b>Transportation<sup>1</sup></b>	<ul style="list-style-type: none"> <li>Reduces greenhouse gas emission/carbon footprint</li> <li>Increases accessibility of housing to jobs, services, shops, and recreation</li> <li>Creates conditions for viable public transit service</li> <li>Promotes healthy activities like walking and biking; increases opportunities for such activities</li> <li>Decreases air pollution</li> <li>Reduces the number and distance of vehicle trips, particularly of single-occupancy vehicles</li> <li>Reduces the demand for parking</li> </ul>	<ul style="list-style-type: none"> <li>Exacerbates traffic congestion, parking issues and increases traffic accidents</li> <li>May be difficult to maintain a private automobile</li> <li>Creates pedestrian congestion and congestion in public transport facilities</li> <li>Causes congestion and disruption at the street level where the construction of high-density buildings is taking place</li> </ul>
<b>Land/ Resource Use<sup>2</sup></b>	<ul style="list-style-type: none"> <li>More efficient use of resources and infrastructure</li> <li>Reduces development pressure on agricultural and industrial land and open space</li> <li>Intensifies uses in urban areas creating vibrant locations</li> <li>Encourages a greater mix of land uses</li> </ul>	<ul style="list-style-type: none"> <li>Reduces an area's capacity to absorb rainfall; increases in impermeable surface cover</li> <li>Provides less choice as to the placement of buildings in spaces when net densities increase</li> <li>Exacerbates pollution through proximity of uses and density of transportation; reduces space for trees and shrubs that can purify air and cool an area</li> <li>Reduces the availability of public open space and limits recreational opportunities</li> </ul>
<b>Social Equity/ Diversity<sup>3</sup></b>	<ul style="list-style-type: none"> <li>Improves housing choice and affordability for all residents</li> <li>Reduces social segregation and exclusion</li> <li>Adds diversity, safety, vitality and opportunities for social interactions</li> <li>Provides better access to facilities and services independent of the ability to afford or own a private vehicle</li> <li>Revitalizes neighborhoods</li> <li>Encourages a sufficient supply of housing</li> <li>Reduces crime by increasing pedestrian activity and supporting a 24 hour community; more 'eyes on the street'</li> </ul>	<ul style="list-style-type: none"> <li>Loss of privacy and increases in noise, nuisances, etc.</li> <li>Obstructs views, causing overshadowing</li> <li>Causes psychological stress, cognitive overload, loss of control, anxiety, social withdrawal, physiological overstimulation, and violation of personal space</li> <li>Leads to constraints on individual behavior and freedom of choice</li> <li>Leads to competition between groups for space and other social conflict</li> </ul>

**Table 1.3 Potential benefits and challenges of higher density development from various viewpoints (continued)**

Subject/Topic	Benefits of Higher Density	Challenges of Higher Density
<b>Economics<sup>4</sup></b>	<ul style="list-style-type: none"> <li>• Enables investment in new and better community amenities and more attractive building materials</li> <li>• Promotes critical mass necessary to support local retail and services</li> <li>• Attracts businesses, hotels, shopping, and upscale residential development to urban areas as well as high-quality health, education, culture, recreation, and municipal services</li> <li>• Enables the use and extension of urban services and infrastructure in an efficient and economical manner</li> <li>• Improves a city's economic efficiency and employment opportunities</li> <li>• Increases productivity</li> <li>• Enables the construction of low-cost, middle-density housing, infrastructure, and land in appropriate neighborhoods</li> <li>• Helps to keep the local economy healthy and vibrant</li> <li>• Increases the overall value of nearby detached dwellings over the long-term</li> </ul>	<ul style="list-style-type: none"> <li>• Increases cost to build and maintain high-density projects than medium- or low-density projects as well as urban infrastructure</li> <li>• Increases relative prices for dwellings, goods and services, and land</li> <li>• Restricts access to more local areas of undeveloped land, which tend to be more highly valued</li> <li>• Negatively impacts the economic development of surrounding rural areas</li> </ul>
<b>Open Space/ Greenspace<sup>5</sup></b>	<ul style="list-style-type: none"> <li>• Increases the value to residents of open spaces within the city</li> <li>• Preserves greenspace, clean air and water, and fauna and flora systems within a plan's boundaries</li> </ul>	<ul style="list-style-type: none"> <li>• Urban open spaces tend to be smaller, designed for certain activities only</li> <li>• In higher density areas where land values are higher, public spaces may tend to be privatized by housing developments or office buildings, thus restricting their public benefit</li> </ul>
<b>Climate Change/ Environment<sup>6</sup></b>	<ul style="list-style-type: none"> <li>• Facilitates innovative, green designs and district energy; reduces consumption of water and energy</li> <li>• Allows for technological and economic viability of certain energy technologies and transportation systems</li> </ul>	<ul style="list-style-type: none"> <li>• Uses more energy during construction of high-density buildings</li> <li>• Limits some forms of ambient energy systems, such as passive solar</li> <li>• Reduces the capacity to cope with domestic waste and recycling</li> </ul>

Adapted from Boyko and Cooper 2011, 10-15.

## Benefits of Metropolitan Densification

**Cost savings:** Programs that promote metropolitan densification tend to result in cost savings related to new infrastructure and the provision of services. Instead of building new infrastructure to keep up with an expanding urban footprint, densification through infill development and redevelopment takes advantage of the urban infrastructure and services that are already in place, often with underutilized capacity. This is not only true for infrastructure like roads and sewers, but also public services such as education, health, public transport, police, fire, and other emergency services usually provided by municipal governments. Based on cost assessments of infill versus greenfield development in the Sydney metropolitan area, Biddle et al. write that “greenfield development requires substantial infrastructure costs...by contrast, these services and infrastructure generally already exist and may have spare capacity in infill areas” (Biddle et al. 2006, 5).

In another study of 3,179 local governments in Spain in 2005, Benito et al. conclude that municipalities with higher population densities had lower per capita spending, including total expenditures, current operating expenditures, and investment expenditures (Benito et al. 2010, 261). Notably, cost savings are only possible where infrastructure and services are not already used to their full potential. When population increases to the point where government needs to expand service, costs will then begin to rise. Other studies (Shapiro, 1963; Schmandt and Stephens, 1963) have also found that the cost savings attributed to higher population densities had limits, although they do not agree on the point at which costs begin to increase along with population. This suggests the need for government to first assess where spare capacity exists in infrastructure and services, and target new development to those areas accordingly.

## Improved transportation and ridership:

Locating more and higher density housing that is closer to urban cores and employment opportunities greatly reduces households’ transportation times and expenses. Higher density living better enables households to take advantage of existing public transportation options, or may even make public transportation possible where it previously could not exist. Gilat and Sussman, discussing transit-oriented development in Mexico City, note the numerous benefits that accrue, as people are able to access the Metro more easily, have increased job opportunities, lower transportation expenses, and save time reaching destinations (Gilat and Sussman 2003, 106).

As with the costs savings benefits described previously, the amount of spare capacity in a transit system plays an important role. If there is not additional capacity available, then densification may potentially increase congestion on these systems, increasing transportation costs or reducing efficiency. However, increasing access to public transit systems also has the benefit of encouraging more sustainable transportation options than the private automobile.

**Increased energy efficiency:** Higher density cities have the potential to increase energy efficiency for several reasons: buildings consume less energy per resident due to insulation provided by adjacent dwellings; attached units within buildings creating fewer external walls; trips made by residents are shorter and less frequent, and can be made by public transit; and more efficient energy systems can be deployed, among other explanations (Boyko and Cooper 2011, 23). In their 1989 study of the relationship between urban form and energy consumption, Newman and Kenworthy identified a negative correlation between higher densities and per capita consumption of energy for transportation (Newman and Kenworthy, 1989). Supporting this finding, Golob and Brownstone

(2005), in another study from 2001 in California, concluded that “compared to households in higher density areas, households in lower density areas: drove larger and less fuel efficient vehicles, often sports utility vehicles (SUVs); owned more vehicles per household; had more drivers per household; drove the larger vehicles more often than smaller vehicles in the household; and drove more kilometers” (Biddle et al. 2006, 10).

Furthermore, Ewing and Cervero (2010) corroborate this notion, finding that metropolitan centralization and land-use mix are two important factors influencing travel mode choices (Dodson 2010, 493; Ewing and Cervero 2010). These findings suggest that people living in dense cities will be more likely to use public transit, leaving their cars at home.

However, other characteristics of transportation networks, such as the quality of and access to public transport, have been suggested to be more important factors in mass transit usage than population density (Dodson 2010, 493). In addition, there seems to be a limit to the energy-saving capacity of higher-density buildings, as the amount of energy needed to build and operate taller buildings outweighs the amount of energy saved through efficiencies. Research suggests that medium-density dwellings of three to six stories have the greatest potential for reducing per capita household emissions. This density is also adequate to support public transit options, further reinforcing the energy efficiency potential of the compact city (Dodson 2010, 499).

**Land preservation:** Encouraging development and densification in already-urbanized areas preserves open space, farmland, and environmentally vulnerable areas, as development pressures are directed elsewhere. Douglas and Lepping (2005), writing on the importance of land preservation strategies for Smart Growth, argue that there is a growing interest in using land

preservation strategies as a more efficient way of protecting natural areas, aquifers, public space, and farmland than with the use of traditional planning techniques (Douglas and Lepping 2005). One of the main characteristics of these strategies is that they can be promoted in different partnerships and associations.

For example, The Nature Conservancy, a nonprofit, has alone preserved more than 12 million acres in the United States (Douglas and Lepping 2005, 2). Other associations led by planning agencies such as the Tahoe Regional Planning Agency have established TDR (transfer development rights) to finance their preservation strategies. Although land preservation has proven a very useful instrument for protecting natural resources, it must still be better aligned with other planning and development tools (Douglas and Lepping 2005).

As mentioned above, strategies such as greenbelts and urban growth boundaries can preserve land outside of a city or metropolitan area that would otherwise be developed. Likewise, urban growth boundaries or urban service areas allow cities or metropolitan areas to control the location and timing of new development. If important sites cannot be protected immediately, these approaches can delay new development until such time that the land can be preserved.

**Range of housing alternatives:** Core cities generally contain a variety of housing types, ranging from detached units to high-rise apartments. Providing such diversity of housing options means that cities are attractive places for many different socioeconomic groups and family or household types. By introducing higher-density housing to suburbs and other low-density areas, densification seeks to make these communities more welcoming and attractive to people from many different backgrounds. In general, high density housing tends to cluster in the central



Sprawling patterns of urban development are common in Mexico. Pictured here: Oaxaca de Juarez, Mexico.  
*Photo: Collection of Ann Forsyth*

and inner parts of urban areas, as these are the locations where land prices are high enough to cover the risk and expense of building larger multi-unit housing (Dodson 2010, 495).

Care needs to be taken so that densification policies do not only encourage luxury high-rise apartments or land speculation. Housing created through infill and redevelopment does not need to be of the high-rise variety found in the central city. As Dodson points out, “Intra-metropolitan building heights in European cities tend to be much more uniform with five to six story medium-rise housing spread more evenly across the city than is the case in Australian cities” (Dodson 2010, 498). This pattern of density throughout the metropolitan area would provide opportunities to accommodate both higher density and lower density buildings into the built fabric of the city in a way that does not seem abrupt or out of place.

### **Challenges of Metropolitan Densification**

**Costly coordination:** It is often time-consuming, politically challenging, and expensive to coordinate across agencies, programs, and policies and between levels of government, as is necessary for the successful implementation of a densification strategy. When local governments must modify existing plans and regulations to be consistent with those of a higher level of government, this imposes costs in staff time or contracting with consultants. **See also the companion Building Better Cities report.** In their analysis of urban containment policies in Michigan (U.S.), Boyle and Mohamed write that coordination of initiatives is unlikely to succeed, as “the primary problem appears to be the lack of state legislation that *mandates* regional planning and other attendant policies such as comprehensive planning and plan consistency” (Boyle and Mohamed 2007, 692).

Similarly, in his discussion regarding the

experience of the government of New South Wales in Australia, Searle states that “a major reason for the limited success of the urban consolidation policies was resistance by older suburban communities, through their local council,” attributable in part to the councils’ own resistance to making necessary changes to the local zoning codes (Searle 2007, 2). Coordinating government programs as well as agencies is politically challenging and generates both time costs and monetary costs. It can take a very long time to implement higher-level policies if local governments must expend resources to make changes in their plans and regulations. To incentivize and support coordination, funding for such changes should be part of a larger federal policy agenda.

**Constrained infrastructure, increased congestion, and pollution:** The capacity of infrastructure to handle additional users and demand should be evaluated prior to allowing new, higher density development, in order to ensure that the levels of service provided by these systems can be maintained at a satisfactory level. Without proper planning, higher density development can be expected to bring with it the constraints of more users, whether with more congestion in transit use or greater energy emissions. As Searle notes in his review of consolidation policies in the Sydney, Australia metropolitan area: “Assumptions about spare infrastructure capacity need to be closely examined, as evidence indicates that road and rail infrastructure, for example, has no spare capacity to meet population increases in many areas” (Searle 2007, 11). Many residents are unwelcoming of higher density development due to its potential impacts on traffic, parking, and the environment (Ruming 2014, 255).

Also of particular concern are the impacts of concentrating people and certain incompatible land uses close together, particularly industrial

uses that have the risk of negatively affecting human health (Neuman 2005, 16). Overall, it is important to identify locations where there is capacity for more development and increased density, as failure to do so may result in substantial negative impacts on the environment, infrastructure and services, as well as general quality of life. Given an overall trend in reduced household sizes and a movement to suburban areas in many metropolitan regions, there may well be excess capacity in existing residential areas that can be leveraged for urban infill or densification.

#### **Decreased access to adequate open spaces:**

Creating denser residential areas in urban areas typically results in less available space for parks and other public open spaces. It is assumed that without the outdoor space provided by single-family backyards, the demands for open space will increase (Byme and Sipe 2010, 4). However, the relationship between density and open space is much more complex. Byme and Sipe, in a review of literature on this topic, found that the open space needs of city-dwellers has more to do with their demographic, cultural, and socio-economic backgrounds than the simple fact of living in denser neighborhoods. Children, for instance, require much greater access to open space than older people (Byme and Sipe 2010, 4-5).

Complicating things further is the fact that open spaces and public parks vary greatly in size and location, and can be used in a variety of different ways depending on their design. Design greatly affects the ability of a space to meet the needs of different populations (Byme and Sipe 2010, 6). Open space is a key variable in determining the quality of life in urban areas. As space is at a premium, it is often difficult to make such spaces available. Given the evidence that demographic groups desire and use public open spaces in different ways, cities and metropolitan areas need

to consider not only their current population but also the makeup of future populations when deciding where to site open spaces, as well as their design and function. At the same time, making open spaces accessible through improved sidewalks, trails and paths, transit, and other means is essential, as it is likely residents will have to travel to different areas of a city to fulfill all of their open space needs. However, because densification uses land efficiently, intensifies development, and potentially increases property taxes, it also provides resources for developing well-designed and appropriately programmed open spaces.

#### **Increased housing and land prices:**

An unintended consequence of containment policies such as greenbelts and urban growth boundaries is that they often constrain the supply of land, thus increasing land and housing prices. This greatly affects the production of new housing in the city or metropolitan area, particularly the supply of affordable housing. In a review of research regarding the price effects of urban containment policies, Dawkins and Nelson find urban containment increases housing prices. Furthermore, Dawkins and Nelson note: “affordable housing production becomes even more unlikely if the supply of developable land is concentrated in the hands of a small oligopoly of landowners” (Dawkins and Nelson 2002, 2).

Such effects place an onus on government to ensure that the production of affordable housing units, particularly when a greenbelt or growth boundary is put in place, keeps pace with demand so that poorer residents are not priced out of living in a city or metropolitan area, where jobs and services are most plentiful (Pendall et al. 2002, 36). Creating flexible containment barriers is a way to ameliorate the price effects of containment policies, by allowing greater control over the supply of land that is available for development. In



Mexico has a range higher density housing types including row houses and low-rise apartments. In large cities high-rise developments are also available.

*Photos: Collection of Ann Forsyth; Nelida Escobedo; Ann Forsyth*

addition, allowing increased densities can help increase housing supply to meet demand on less land. However, such policies require that government be active in monitoring and forecasting the supply and future needs of the city and metropolitan area.

### **Programs for Metropolitan Densification: Conclusions**

The Mexican government has created urban containment boundaries around all metropolitan areas in Mexico and is focusing urban housing subsidies and mortgage origination in those areas. This is a positive first step towards controlling urban growth in Mexican metropolitan areas. This system, effectively an urban growth boundary, creates regulatory barriers to encourage urban growth in infill locations and in areas directly contiguous to already urbanized areas. However, such a policy by itself may not be able to continue to provide an adequate supply of new housing to match demand, especially if the sites on which to build infill projects are limited or complex to develop, or if the municipal zoning and land use regulations prohibit higher density development. As exemplified in the case of Guadalajara—where the municipality has their density instruments “frozen”—densification strategies at the state and municipal levels, and coordination between agencies at these various levels, will be needed in order to adjust zoning and land use regulations and identify areas for higher density growth and redevelopment.

As discussed in subsequent sections of this chapter, successful densification policies need to contain elements that effectively facilitate infill development and address the concerns of residents. One cross-cutting takeaway is the importance of identifying areas with excess infrastructure capacity as ideal sites for infill development. Promoting density in areas with adequate infrastructure will help to reduce costs for the government and improve quality of life for residents. Differentiated property taxation, with higher taxes for underutilized or vacant properties, is one mechanism that can help to target specific areas for development. Careful framing of densification policies and incentives can help to optimize benefits of densification, while mitigating the costs. The following section looks more closely at the ways in which the urban infill development process can be simplified, benefitting developers, municipalities, and communities alike.



## 1.2 Simplifying the Urban Infill Process



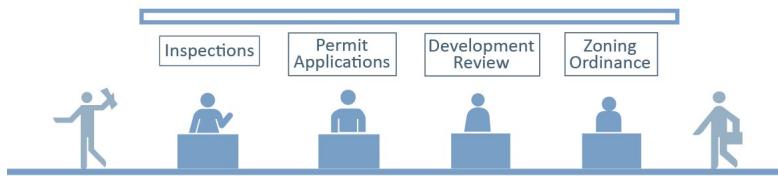
### Simplifying the Urban Infill Process

#### What It Is

- Strategies for simplifying urban infill focus on streamlining the development process, making it quicker and more efficient.
- Clarifying the rules and regulations governing infill development, eliminating any overlapping and contradictory rules, adds a level of certainty and predictability to outcomes.
- Planning policies, like land readjustment, can make assembling land and planning infill projects much easier.

Increasing urban infill development is often cited as a goal of governments and planners, especially those seeking to present it as a better alternative to urban sprawl. However, numerous barriers make it an unattractive venture for real estate developers and investors. In particular, compared to development on greenfield sites, urban infill is often associated with uncertainties over the outcomes of complicated review and permission processes, as well as the potential for long delays in receiving permissions due to contradictory regulations

New infill development in central Guadalajara is an example of contemporary infill, with apartments available for INFONAVIT financing.  
*Photo: Margaret Scott*



In a One-Stop Shop constituents can complete all the necessary steps to get a project approved.  
Diagram by Irene Figueroa Ortiz

and bureaucratic red tape. To address these issues, governments work to make their review processes clear and concise, as well as to provide developers and property owners with procedural and urban planning tools that make it easier for them to engage in infill or urban redevelopment projects.

**The following are strategies governments can implement in order to facilitate the process of infill development:**

- **One-Stop Shops**
- **Clear rules and regulations**
- **Project facilitators**
- **Educational programs and materials**
- **Land readjustment**
- **Redevelopment agencies**

### 1.2.1 One-Stop Shops

**What it is:** A one-stop shop brings together in one central location officials and civil servants who participate in development review and approval processes. This way, developers or residents only have to visit one location to apply for permissions or to submit plans for approval, increasing the ease and efficiency of the review process.

**How it works:** Limiting the number of locations a developer needs to visit in order to obtain permission or approval for a project makes the development process much quicker, not to mention easier, especially for first time developers who may be unaware of how the development process in a particular jurisdiction works (Beane et al. 2005, 20). In addition, one-stop shops allow for all of the government agencies involved in the development process to meet with one another and discuss proposals together, instead of in a piecemeal and uncoordinated fashion. One-stop shops may also contain reference centers, or

repositories (either digital or analog) of tax maps, development regulations, zoning and other development codes, building permits, and other public information, allowing the public to obtain information regarding a specific property or project in a single location (Schmidt et al. 2001).

In a quantitative analysis of development activities in 469 American municipalities between 1987 and 1992, Feiock and Jeong (2002) determined that not only did regulatory reforms like one-stop shops make development easier, they also encouraged greater levels of development and investment. Their analysis found that “cities that implemented consolidated permit processes [like one-stop shops] were estimated to have new capital investments of \$10.6 million more than cities lacking similar regulatory reform efforts” (Feiock and Jeong 2002, 157). The authors of the study attribute this result to the fact that “by reducing uncertainty and delays, local governments may promote both regulatory goals and economic growth” (Feiock and Jeong 2002, 158).

**Example:** The City of Austin in the U.S. state of Texas is one of many cities throughout the world to have seen improvements in the development process by implementing a one-stop shop. Previously, the process required developers to visit multiple locations in order to obtain the proper permits and permissions necessary for a project. Since there was no coordination among the agencies involved, an approval by one agency could create problems down the line, as the agencies were unaware of the requirements of another (Wilkinson 2005). However, with one-stop shops, such problems were no longer an issue, and the city was able to shorten the amount of time it took for a project to go through the permitting process (Beane et al. 2005, 20).

### **One-Stop Shops: Implications for Mexico.**

Developers in Mexico frequently cite the frustrations of working with municipalities in the construction and permitting process. In spite of available land or housing demand in other areas, developers may choose to work in specific municipalities where the process is more streamlined. In response, many states and local authorities are implementing one-stop shops (often known as *ventanillas únicas*) to expedite the permitting process, clarify regulations for developers, and thus incentivize construction. Though results are mixed, these efforts to align policies and to streamline permitting are key to any effort to simplify the infill development process.

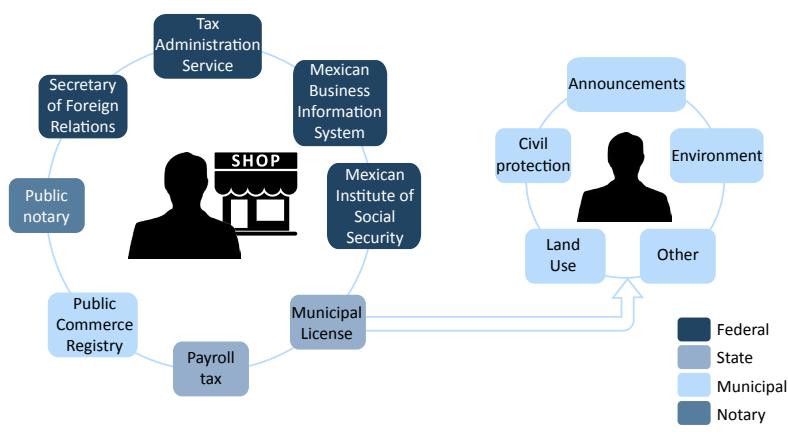
### Takeaways:

- By shortening approval processes, one-stop shops can save time and costs for developers and governments alike.
- In doing so, one-stop shops can reduce development risk, thereby increasing the attractiveness of infill development, which tend to be more complex from a regulatory perspective.
- One-stop shops must be carefully regulated to ensure that they create a more equitable process for all developers, rather than continuing to favor certain influential actors.

### 1.2.2 Clear Rules and Regulations

**What it is:** Creating clear and understandable rules and regulations regarding infill development and other development processes greatly cuts down on the level of uncertainty faced by developers, as well as uncertainty among government agencies that might be operating under overlapping and contradictory rules.

**How it works:** Uncertainty about how regulations will be applied or interpreted, especially when they are contradictory, is of much greater concern to developers and real estate investors than is the mere presence of regulations regarding development (Feiock and Jeong 2002, 158). By making the rules and outcomes regarding project approval transparent, understandable, and clear, governments can dispel much of this uncertainty. In addition, such actions will greatly improve the speed with which proposals can obtain the necessary permits and permissions, by clearly outlining clearly each agency's responsibilities. This requires governments to thoroughly review the laws and regulations that govern development review processes and either eliminate overlapping and contradictory rules, or create a method



The diagram is part of a report from the Organization for Economic Cooperation and Development, "Guide to improve regulatory quality of state and municipal procedures and boost competitiveness of Mexico" - *Guía para mejorar la calidad regulatoria de trámites estatales y municipales e impulsar la competitividad de México* - that aims to clarify service in Mexican municipalities. Adapted from OECD 2012, 17. Diagram by Jorge Silva

by which these contradictions can be resolved between agencies in a timely manner.

**Example:** In 20015, the state of Aguascalientes in Mexico developed the System for Planned Developments and Condominiums in Aguascalientes (*Sistema de Fraccionamientos y Condominios de Aguascalientes*, SIFRAGS) as an online database with up-to-date information about building codes, zoning, and property information to improve the transparency and efficiency of the construction and permitting process (OECD 2013, 124). The system has proved to be useful both for the public to access timely information as well as for public servants in charge of revising and approving construction permitting (OECD 2013).

#### **Clear rules and regulations: Implications for Mexico.**

Clarity of rules and regulations is key to ensuring transparency of processes and providing a sufficiently stable environment to encourage investment. This is particularly relevant in the housing sector with changes to the urban containment boundaries or subsidy regulations, all of which greatly affect development and construction. Through the “Strengthening Economic Competence and Regulatory Practices for Competitiveness in Mexico” initiative, the federal government has attempted to improve the regulatory framework at different levels of public administration. The research project developed a guidebook with short-term and high-impact implementation actions to streamline the permitting process of opening a new business, construction permits, property registry, access to information, and public works bidding (OECD 2012).

#### **Takeaways:**

- Clear rules and regulations reduce uncertainty for developers and investors and thus increase the attractiveness of

development opportunities, including infill and densification opportunities.

- Other active stakeholders, like community groups, may also benefit from having a clearer sense of likely development outcomes to help guide priorities and community goals.

#### **1.2.3 Project Facilitators**

**What it is:** Project facilitators are government employees or freelance permit facilitators who act as an intermediary between the developer and other government employees involved in project approvals.

**How it works:** Project facilitators are individuals who are knowledgeable about the development review and permitting process in a city or local government, and help to guide developers and other applicants through the process. Such a strategy provides the developer with a single contact person with whom he or she can consult regarding questions or project updates. In addition, facilitators work with the agencies responsible for reviewing the proposal, ensuring each one completes its review in an efficient and timely manner. If issues arise in the review process, the facilitator can then work with the developer and government agencies to resolve the problem (Beane et al. 2005, 28).

**Example:** In Mexico, given the often bureaucratic and lengthy licensing and permitting process with government entities, many companies and individuals hire private project facilitators that help them navigate the system and expedite approvals and reviews. There is a wide variety of project facilitators from formal consulting firms to middlemen. For instance, in the construction sector, facilitators often help developers to obtain land use certificates, construction permits, home assessment, safety certificates, environment approvals, etc.



Informal educational meetings to update developers on new regulations and processes can help facilitate infill.

*Photo: Collection of Ann Forsyth*

### Project facilitators: Implications for Mexico.

In Mexico, project facilitators (often known as *gestores*) are frequently hired by developers or construction companies to speed up the permitting and licensing process at the municipal level. In line with the model outlined in the text, this role could instead be held by a designated government employee, and monitored carefully to minimize corruption and to ensure equal treatment of all developers or investors.

#### Takeaways:

- Employing project facilitators provides a flexible approach to expediting development and encourages a strengthened relationship between the public and private sector.
- Governments need to deploy strategies to mitigate corruption while providing improved and more efficient interaction with users.
- A public project facilitator should be able to give all developers equal access, potentially opening up opportunities for smaller, local developers.

#### 1.2.4 Educational Programs and Materials

**What it is:** Both the infill development approval process and the requirements developers and other applicants must meet tend to be complex and difficult to understand. Creating programs and campaigns that seek to explain and outline the process can be an effective way to make the process clearer and less daunting, especially to first time developers or community members.

**How it works:** While information is needed for all development processes, it is particularly critical in this area because infill tends to be more complex.

There are many ways governments can create educational programs and campaigns. One common method is to create informational documents or guides with clear descriptions of the steps and processes that a proposal must go through for approval. The government could also hold information sessions or meetings with local developers and interested citizens to explain the development process and answer questions.

The more simple and straightforward the process is, the easier it is for government to explain it and educate developers and citizens.

**Example:** The municipal government of Portland, Oregon, U.S. holds bi-monthly meetings with local developers, known as “Lunch and Learn.” The meetings are organized as training sessions and include members of the different agencies involved in the development review process. Since these meetings are held regularly, they allow the city government to update developers on any changes to requirements or processes (Beane et al. 2005, 32).

### Educational programs and materials: Implications for Mexico.

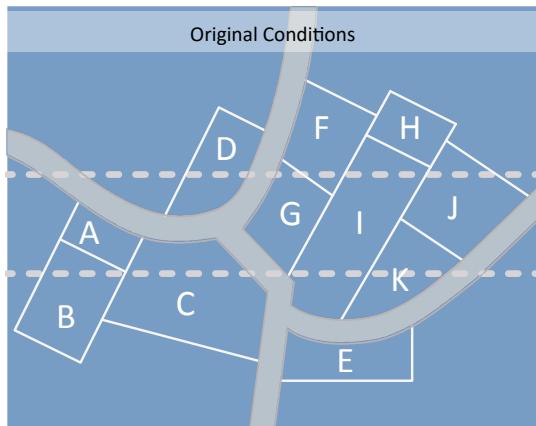
Educational programs and materials regarding the development process could be great resources for developers seeking to navigate the complicated investment and construction system in Mexico. Though simple in concept, and saving time in the long run, developing educational materials and placing them in an accessible location such as a website requires significant staff time and interest. Developing educational programs and materials in support of the urban infill process could, however, be part of a larger effort to better coordinate the municipal development process and has significant potential in Mexico.

### Takeaways:

- One barrier to infill development is the availability of educational resources and technical information. Providing clear and structured information to developers can help reduce development time lags. Even developers who are familiar with local development processes may benefit from regular updates concerning any changes in regulations.
- Educational programs and materials can be combined or aligned with other efforts, such as the initiation of a one-stop shop, changes to zoning regulations, or creating a municipal website to share data.

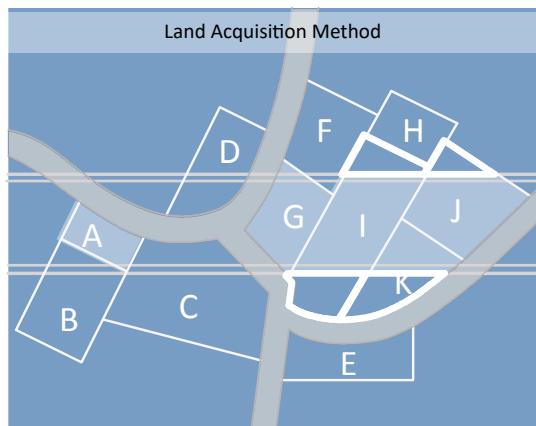
### Step 1

Identify issue: insufficient street system



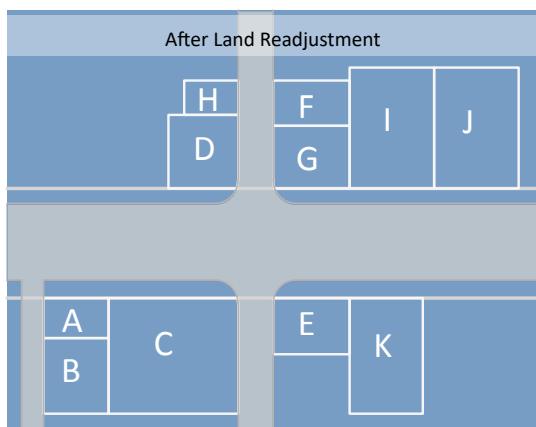
### Step 2

Acquire land



### Step 3

Reassign lots while maintaining original land area



Japan's Land Readjustment model has facilitated urban infill development and redevelopment. Letters represent property owners whose land is combined so that infrastructure and larger projects can be built and then reallocated proportionally. While the parcels will probably be smaller due to development the value is typically larger.

*Adapted from Vergel 2012, 2*

*Diagram by Jorge Silva*

### 1.2.5 Land Readjustment

**What it is:** Land readjustment programs are used to readjust parcel boundaries among many different landowners in a specific area while allowing the owners to maintain ownership of the land. It is used when land is difficult or impossible to acquire due to fragmented ownership.

**How it works:** Land readjustment is commonly used in redevelopment projects or with infrastructure and service provision by governments. Countries that have employed land readjustment as a planning tool include Japan, Germany, Sweden, Taiwan, and Korea (Sorensen 1999, 2333). There are many different ways in which countries have chosen to design the rules for using this strategy. However, most programs entail different property owners (or occupants in the case of renters or informal settlements) joining together into a legally recognized organization or association allowing development projects to occur across all of their parcels. Title to the land is never surrendered, so once the project is complete, the owners receive a new parcel of proportional size or value to the one they owned before. While the parcels will probably be smaller, due to infrastructure and other services built in the project, the value of the parcel is almost always greater due to these new improvements (Hong and Brain 2012, 4).

Some countries require that all the property owners in the area agree to enter into the readjustment process, while rules in other countries require only a 2/3 or super majority of owners. Those owners who are not willing to participate in the readjustment process are given the opportunity to sell their land to the association (Larsson, 1997, 143). Overall, land readjustment makes it easier to do infill development, as projects can be more flexible and have more space to provide infrastructure and services. It also allows multiple landowners to redevelop

properties in coordination with one another, instead of requiring a single developer to assemble multiple parcels, which can be costly and time-consuming.

**Example:** Japan is a country that has extensive experience with land readjustment, having used the policy to aid in the rebuilding of cities destroyed during World War II. In that country, readjustment is used in both infill projects and greenfield development. According to Larsson (1997), in 1997, land readjustment was responsible for roughly 50% of all new development in Japan (Larsson 1997, 145). Both the public and the private sector are allowed to initiate the readjustment process, which requires 2/3 of owners and leaseholders to consent in order to become an established and recognized association.

Before being recognized, a preliminary process “where goals, preconditions, planned results and construction, estimated costs and gains are clarified” must occur (Larsson 1997, 146). Then, the project must go through a more thorough planning process where ownership and land values are established and the final plan and ownership are determined. The process has been the subject of criticism in Japan, as projects are not required to have a formal urban plan, sometimes resulting in buildings of very different heights or appearance being built in the same block. However, overall it is considered an essential tool for urban development (Larsson 1997, 147).

**See Japan’s Land Readjustment case study in Appendix D.**

A more participatory and community oriented approach to land readjustment is a pilot project promoted in Colombia by UN-Habitat. The Participatory and Inclusive Land Readjustment, called PILaR, is a pilot aimed at overcoming some of the structural barriers that impede land readjustment in developing countries such as

inadequate legal and land systems (UN-Habitat n.a.).

The pilot, implemented in Medellin, will exemplify the ways in which sustainable urban development can be achieved through close work with the community, neighbors, local authorities, and businesses with input early on in the process. (UN-Habitat 2015).

### Land readjustment: Implications for Mexico.

Although land readjustment practices in Mexico are not formally implemented, new institutional arrangements through the National Institute of Sustainable Land (INSUS) will take steps towards a more sustainable management of land. With a more accurate inventory of land in place, land readjustment strategies could help incentivize development in historic centers and consolidated urban areas. The main barriers to readjustment in Mexico include land fragmentation, inadequate land registration or cadasters, as well as the challenges of *ejidal* and communal landownership in certain regions.

#### Takeaways:

- Land readjustment can provide a mechanism for overcoming the barriers of land fragmentation in order to coordinate the development of additional infrastructure and buildings.
- It is important to pair the preparation of formal urban plans with land readjustment in order to achieve desirable planning outcomes.
- Because of the number of landowners and actors involved, readjustment can be a highly challenging process to coordinate.
- Land readjustment relies on a strong land registration system.

### 1.2.6 Redevelopment Agencies

**What it is:** Redevelopment agencies streamline revitalization projects by providing the private sector with subsidies, financing, and relief from local codes.

**How it works:** Redevelopment agencies are used in many countries. They arose in the U.S. during the 1940s as quasi-governmental authorities for urban renewal. In keeping with financing opportunities introduced by the National Housing Act, many states passed urban redevelopment laws enabling the creation of corporations to redevelop “blighted” areas, through mechanisms such as eminent domain (Gordon 2003, 311). Subsequent backlash against brutal urban renewal projects, like the demolition of the West End in Boston, led to policy reforms and changes to the urban planning profession. Most recently, urban redevelopment agencies in the U.S. have increasingly emphasized entrepreneurial forms of governance and project development, seeking to leverage scarce municipal resources through public-private partnerships (Jonas and McCarthy 2009, 302).

Tools employed by redevelopment agencies include special districts, general obligation bonds, and tax increment financing (TIF). Certain planning mechanisms like special districts can allow redevelopment agencies to bypass state-imposed restrictions, such as debt limitations and public engagement requirements, in facilitating public-private partnerships (Jonas and McCarthy 2009, 306). While redevelopment agencies can enable and expedite urban regeneration initiatives, critics argue that top-down control by such agencies may undermine the public good (Jonas and McCarthy 2009, 305-6). Furthermore, the public sector may incur greater financial risk through public-private partnerships (Jonas and McCarthy 2009, 305).

**Example:** The ongoing Atlantic Yards development in Brooklyn, New York, U.S., presents an example of a large-scale, controversial public-private partnership facilitated by an urban redevelopment agency. Atlantic Yards is a mixed-use project located on a 22-acre site adjacent to Brooklyn's largest transit hub and in close proximity to several historic districts and residential neighborhoods (Lavine and Oder, 2010, 291-2). Forest City Ratner (FCR) is developing the project in conjunction with the Empire State Development Corporation (ESDC), a statewide redevelopment agency. ESDC has streamlined the development process by exercising eminent domain, overriding city zoning regulations, and removing the project from the New York City Urban Land Use Review Procedure, which involves review by elected officials (Lavine and Oder, 2010, 306 and 323). The City and State have also provided direct capital contributions and tax exemptions (Lavine and Oder 2010, 322-3).

Criticisms of Atlantic Yards concern the limited degree of bidding competition and public engagement in the development process as well as the high favorability of terms for FCR (Lavin and Oder 2010, 300-1). Recent adaptations to development plans have included tightening the required timeframe for affordable housing completion from 2035 to 2025 and renaming the project Pacific Park Brooklyn (Filler 2014).

**Example:** A Latin American example of a redevelopment agency or authority is the Institute of Urban Development (*Instituto de Desarrollo Urbano, IDU*) in Bogota, Colombia. The IDO is a decentralized public entity of the city government, designed to work on physical infrastructure projects. The Institute focuses on the construction and conservation of transportation systems as well as sustainable public spaces (IDO 2015). IDU is responsible for both the planning as well as execution of "plans, programs, and projects

related to road, transport, and public space systems," all with the aim of making Bogota a more competitive and higher quality place to live for residents (Irazábal 2009, 64). Construction projects include a range of responsibilities, from the construction of Bogota's cable car transit system, renovation of pedestrian walkways, or ongoing improvements to TransMilenio stations.

### Redevelopment agencies: Implications for Mexico.

At present, there is no formal redevelopment agency system for housing and urban development in Mexico. Some infrastructure redevelopment agencies may take this form, but are typically more focused on revitalizing aging large-scale infrastructure such as dams, highways, or railways. Such redevelopment projects are forged between the federal and state governments, as well as private investors, and often in arrangements known as *Asociaciones Público Privadas (APPs)*, or public-private partnerships. Housing institutes at the municipal level or metropolitan planning institutes across Mexico have the potential to play a larger role in redevelopment if properly funded and equipped to coordinate and partner with the private sector. *Fideicomisos* (trusts) are one potential option with precedents across Mexico that could bring together private investment and the public sector.

### Takeaways:

- Redevelopment agencies offer a flexible model for bridging between local government agendas and private sector investment through public private partnerships.
- Because of this flexible model, the approaches of redevelopment agencies and their dedication to community engagement vary substantially (Jones and McCarthy 2009, 303).

- Across the United States, local redevelopment agencies function in vastly different circumstances and with varying missions and levels of power. Recent federal programs (through the Neighborhood Revitalization Initiative) have attempted to support and guide the work of local redevelopment agencies (Jones and McCarthy 2009, 312; White House Office of Urban Affairs, n.d.).

## Benefits and Challenges of Simplifying the Urban Infill Development Process

Governments can reap significant benefits by implementing the strategies outlined in the preceding section. By improving the transparency of regulations and encouraging greater coordination among and within government agencies, these mechanisms can reduce the time and money developers must spend undergoing the review and permission process. By promoting compact cities and other densification policies governments can often save infrastructure costs and capture economic activity.

While strategies to improve the development review and permission process for infill projects are easy to identify, they are often harder to effectively implement. This may be attributed to the need to train government workers and implement new processes and technologies as well as the challenge of coordinating among different agencies involved in development review and resolving contradictions in existing rules and regulations.

### Benefits of Simplifying the Urban Infill Development Process

**Bolstered development due to regulation clarity:** Simplifying development processes, especially for infill development, is important because it encourages governments to clarify and coordinate their urban plans, guidelines, regulations, and

laws. This allows developers to plan and design projects that are in line with community visions and planning guidelines set forth in planning documents.

### Challenges of Simplifying the Urban Infill Development Process

**Costs of training and keeping knowledgeable civil servants:** Many of the proposed strategies listed above require that government agency staffs and civil servants not only be able to work collaboratively with one another, but that they be knowledgeable about the entire development process, and that they be able to provide a quality customer service experience to developers and other citizens who visit their office.

One challenge is that these strategies usually mean that governments must invest money into training their employees, especially if streamlining efforts incorporate new processes or information technology systems. Another challenge is that reforms might require significant changes in the way the agency operates, or how it cooperates with other agencies.

An example illustrates this point. In order to provide its citizens with more efficient government services, the Brazilian state of Bahia implemented a one-stop shop system in the mid-1990s. While not a system oriented towards planning, it highlights some of the problems such a system might face. One such challenge was that in the state, underperforming civil servants were customarily placed in positions where they interacted most with the public, such as at the front desk of offices (Scharff 2013, 3). In response to this, when the one-stop shops were opened, customer service and satisfaction was made the top priority to great success. Nonetheless, efforts to improve service were still hampered by tenure rules for civil servants and political patronage (Scharff 2013, 12).

The success of many strategies to simplify infill development depends on competent and knowledgeable government employees, especially if improvements in efficiency and customer service are expected. Government services may need to be reoriented towards serving the public.

**Costly information technologies:** Many governments that have implemented the strategies listed above in order to improve and simplify development processes were helped by implementing new information technology systems, which aided with tasks like tracking permits, providing information to developers and citizens, and increasing transparency in the process. A simple website with contact information, downloadable documents, or information about planning processes, can be inexpensive but also very helpful in demystifying the process.

However, the more elaborate of such systems can be costly to implement and maintain, requiring funding to train employees and hire technicians or information technology (IT) professionals to manage the system. In a review and analysis of the permit approval process in Madison, Wisconsin (U.S.), Beane et al. (2005) citing Bain (1999), noted that the price of a permit tracking system ranged from \$50,000 to \$250,000, not including the price of maintenance, software and hardware upgrades, IT staff, or training for current employees (Beane et al. 2005, 28).

Additional costs include the time and money it takes transferring data, documents, and other information from analog systems to digital ones. While the expense of IT tools and software are high, it does not mean that this strategy should be discounted entirely. For example, this may be an area where a metropolitan planning institute can help municipalities coordinate. In addition, grant programs from the national or state government might be necessary in order for wider adoption of

these systems across a variety of municipalities, and could potentially be implemented as a shared system among municipalities or a metropolitan area.

#### **Costly cooperation or coordination:**

Cooperation among government agencies is not always easy. Removing any overlapping and contradictory rules and regulations can also be a challenge, especially if a fair and effective framework for doing so is not established. Issues can also arise in the creation of one-stop shops, especially when it comes to which agency should house, fund, or coordinate the activities that occur therein.

In Bahia, Brazil, issues regarding funding and authority were a real challenge for the agency seeking to establish one-stop shops in the state. Many agencies were reluctant to send workers to staff the shops, as they were already strained under their normal workloads. In addition, authority over these workers was contested, with many federal and state agencies involved not wanting the state Secretariat of Administration to give their employees direction (Scharff 2013, 5). Furthermore, due to political party difference between the state's governor and the mayor of the state's largest city, Salvador, municipal agencies chose not to participate in the one-stop shops (Scharff 2013, 5).

While encouraging cooperation and coordination may be seen as a challenge, simplifying infill and other development processes may in fact be a good place to start. Other strategies for densification certainly will require different agencies within the same level of government to cooperate with one another. Programs like one-stop shops could serve as a starting point for further collaboration between agencies involved in the planning and development of the city or metropolitan area.

## Simplifying the Urban Infill Development Process: Conclusions

A clear and coordinated approach to urban development can help communities to attract urban infill and redevelopment in a timely way by reducing expenses and risks for developers. Minimizing regulation is not necessarily needed to promote development; rather, clarifying regulatory processes is key. Furthermore, framing straightforward, formal approval processes increases the likelihood that development will reflect the agreed-upon regulations, plans, and community priorities, rather than ad hoc adjustments to avoid development roadblocks. Simplifying urban infill development processes is not an easy task, however, and can require new systems of cooperation and new regulations (e.g. for land readjustment), which may impose additional financial burdens on local governments.



## 1.3 Promoting Acceptance of Urban Infill



### Promoting Acceptance of Urban Infill

#### What It Is

- Strategies that promote densification seek to increase public participation in developing densification policies so that community members can learn about these policies and their impacts before specific developments are proposed.
- Urban infill and densification have not been widely accepted as appropriate strategies among members of the public.
- Opponents of densification include community members, cities, and metropolitan agencies.
- Educating the public on the planning process and on the benefits of infill development and densification are essential elements to any strategy promoting infill.
- Ensuring that higher density development is well-designed and managed is also key to its acceptance by neighbors and potential residents.

Infill development can be created in areas well-served with parks and other green space.

*Photo: Collection of Ann Forsyth*

While densification policies, motives, and goals are widely accepted in the urban planning and design fields, there is considerable evidence that the public at large is not convinced they are a good idea due to concerns about negative effects such as traffic congestion and pollution. Where such policies have been implemented in North America, Australia, and New Zealand, they have often met with considerable resistance from local communities. The causes of this resistance are varied. However, if planners and policy makers are to make the compact city a reality, persuading reluctant residents to support densification policies is essential.

Broadly, opposition to densification may be classified into two distinct scales: opposition that occurs at the local level and opposition that occurs on the city- or metropolitan-wide level.

- **Local:** Local opposition occurs mainly in low-density neighborhoods in response to new, usually higher density, developments nearby (Ruming 2014, 258). Often characterized as NIMBY (or not-in-my-backyard), the opposition is mainly concerned with the effects a new development will have on the quality of life or character of their neighborhood including stresses on public services, housing affordability, and worries about social change. In relation to densification policies, local groups “seek to resist increased density on the basis that new development will increase traffic and reduce car parking, potentially reduce housing prices, introduce new groups into established communities (often renters), negatively impact upon local environment, and change the reputation of an area” (Ruming 2014, 255).
- **City/Metropolitan:** City or metropolitan opposition to densification, beyond the

neighbors immediately affected, is due mainly to residents’ preferences to live in low density housing over higher density housing as well as municipal fears about increased service needs and changing demographics (Lewis and Baldassare 2010, 221). Such sentiments are often based on perceptions (or misperceptions) about density, as well as historical and cultural experiences in places like North America, Australia and New Zealand, where low density living is seen as playing an important role in defining the “way of life” in such places (Vallance et al. 2005, 729).

Because acceptability of infill is such a complex issue, it is necessary that a good strategy include multiple programs.

**The following sections describe ways in which governments can promote acceptance of infill development and densification:**

- **Proactive participation and public education**
- **Pilot programs**
- **Design standards**
- **Redevelopment of historic centers**

### 1.3.1 Proactive Participation and Public Education

**What it is:** Proactive participation can describe any number of strategies that involve residents and decision makers in formulating or developing planning policies or development frameworks. There are two broad goals of proactive participation programs: to inform the public of planning processes and to receive feedback.

**How it works:** As opposed to reactive participation, where residents and neighbors react to developments as they are proposed, proactive participation seeks to resolve issues with policies before they involve specific development projects,



A workshop where community members devise development scenarios at the corridor development initiative in the Twin Cities.

*Photo: Collection of Ann Forsyth*

which avoids costly delays and uncertainty for developers (Forsyth et al. 2010; Hurley et al. 2013, 10). It also reaches out to many groups in the population, not only those likely to protest new development.

Strategies generally involve planners and policy makers meeting with stakeholder groups to explain a specific policy and allowing these groups to discuss their concerns. Ideally, residents come to understand that their concerns may be misplaced and/or the policy is altered or changed to address the concerns of residents. They can also include less interactive approaches such as highlighting successful infill projects in local media, sharing data about the specific benefits higher density housing creates in the city or metropolitan area, providing information on different housing types or mixed-use options, or reframing arguments for higher density in ways other than in support of environmental sustainability.

**Examples:** The Corridor Development Initiative had worked with volunteer neighborhood groups and citizen committees in transit corridors in the Twin Cities metro area (Minneapolis and Saint Paul, MN) to explore siting higher density and affordable housing along transit corridors. The aim was to bring “communities, governments, and developers together to share information, build relationships, and create shared guidelines for how future development can both add value to the neighborhood and expand housing choices in the context of what is financially viable” (Forsyth et al. 2010, 269).

Typically, the process involved multiple meetings including highly interactive and visual exercises, some held at existing community events to maximize participation from those who did not normally go to special meetings (Forsyth et al. 2010, 272). Residents then worked to create a

one-page set of guidelines for developers about what is acceptable in their neighborhood, making the ground rules clear. **This example is explained in more detail in Appendix D.**

**Example:** There are a number of examples of tools that help understand the variety of higher density development types and their benefits. In the United States the Lincoln Institute of Land Policy has created tools to visualize density: <http://www.lincolninst.edu/subcenters/visualizing-density/>.

### Proactive participation: Implications for Mexico.

Proactive participation is useful for promoting acceptance of urban infill, particularly against the backdrop of opposition to density and verticality observed across Mexico (outside of Mexico City). *Fundación Hogares*, an NGO partnering with INFONAVIT, is currently helping bridge the distance between developers and neighbors through community engagement projects and neighborhood revitalization efforts. In addition to community engagement in existing INFONAVIT developments, *Fundación Hogares* also documents the needs of current residents in order to offer feedback for developers building new homes in the area, demonstrating one way in which residents and decision makers can be brought more closely together in the urban development process.

Another way to promote acceptance of urban infill in Mexico is to require developers to show the real costs of purchasing a house far away from jobs and urban centers. Education programs can also be helpful in educating credit holders and new homeowners on the expectations, regulations, and strategies for living together in condominium arrangements that may be unfamiliar to many households. Many social housing developers in Mexico are beginning to partner with supervision and management organizations (Grupo MIA is

one particularly well known company) to address the need for better condominium management services.

### Takeaways:

- At a minimum, highly interactive and visual community exercises can help to clarify complex development ideas in order to facilitate meaningful engagement. This proactive participation approach can raise awareness among residents about why development is taking a particular form and the expected benefits and risks.
- Proactive participation can also provide developers with a clearer understanding of local expectations and enable them to provide acceptable solutions.
- Current marketing techniques promoted by developers do very little to adequately address the true advantages and disadvantages of new developments in peripheral areas.
- Blogs, magazines, and other media that feature apartment, city, or high-density lifestyles can be an effective and informal way to market densification. Awareness can also be raised through conferences or major events organized by universities, research organizations, or major housing agencies about the benefits of and strategies for sustainable urban infill and densification.

### 1.3.2 Pilot Programs

**What it is:** Pilot programs allow a municipality or metropolitan area to test out different densification programs before they become official policy and are adopted everywhere in the jurisdiction. They are particularly useful in urban infill in Mexico because so much development has taken other forms and experience needs to be built up.

**How it works:** Pilot programs work best when planners carefully select a site or project that is representative of the types of projects they intend to encourage under the new policy. They offer the opportunity to test many aspects of a program (its implementation, its financing, its costs, its performance over an extended period of time, etc.).

Monitoring and evaluating the program is essential, and will allow changes to be made. In addition, pilot programs allow the public to see both the processes and results associated with a policy. Soliciting public feedback and comments are an important component. Having a physical example of the outcomes that the program will produce is helpful in these discussions as the public tends to have difficulty visualizing and comprehending the physical implications of planning policies (Hurley 2013, 10).

**Example:** INFONAVIT is conducting a series of pilot projects through the country to diversify their credit portfolio and adapt to their credit holder's needs. One of most recent and vastly publicized pilot programs is *Arrendavit*. This program is a pilot project to bring back to the market unused or rehabilitated abandoned housing as a rental option for credit holders who demand a housing solution but do not yet meet the credit requirements to purchase a new home.

### Pilot programs: Implications for Mexico.

Pilot programs have been put into place across INFONAVIT's portfolio of credit options. Examples include *Arrendavit*, described previously, for credit holders to opt to rent INFONAVIT homes; *Manos a la Obra*, to enable credit access on *ejidal* or communal lands; or *Hogar a tu Medida*, for credit holders with disabilities to acquire accessible homes. Although some of these programs have been conceived with regional differences in mind, pilot programs may be even more effective when delegated from the federal to the local scale, thus allowing municipal or state governments to be more involved in piloting new initiatives based on their specific experiences, planning objectives, or housing needs.

Though intended to induce flexibility, pilot programs that are initiated from the federal level may nonetheless create greater confusion with more regulations to which developers must comply and local delegates must uphold. A next step might be to integrate these alternative credit options with other ongoing infrastructure or development projects at the local level, particularly in areas in need of infill or higher density housing to fulfill housing demand more sustainably and enable local actors to participate more directly in the pilot program process.

### Takeaways:

- Pilot programs can allow government agencies and organizations to “kick the tires” before launching a large-scale program, thus reducing unnecessary spending or risk.
- Pilots can increase the likelihood of overall acceptance, as there is opportunity to assuage the fears of skeptical community members and to make improvements to performance and adjust policies to reflect community concerns.

### 1.3.3 Design Standards

**What it is:** Design standards regulate the look of new developments and renovations. They can be used to promote certain predominant urban design features in order to achieve consistency with the “character” of an area, or to encourage design features in an area where such features are lacking.

**How it works:** Design standards work best when created for specific areas or neighborhoods. In the case of infill development, design standards can be used to ensure that new, higher density

The design characteristics of Atlantic Station portray a sense of regional architecture.

*Photo: PEDS, Flickr.*



developments are designed in such a way that they do not significantly alter the feel of a neighborhood, and where they do they improve it. Standards range from general, e.g. creating a consistent street wall around a development, to very specific, e.g. requiring certain architectural elements, sidewalk widths, building materials, or building types/styles. Including residents in the creation of the design standards for their neighborhood or area could be an important way to proactively address their concerns about new development, especially infill development.

### Design standards: Implications for Mexico.

Design standards may be useful to help promote infill in Mexico, particularly in larger cities and more historic areas. Thoughtful consideration of design standards for new infill projects may help their integration into the existing neighborhood fabric, adherence with historic regulations, and acceptance by existing neighbors. Currently, some developers in Mexico are trying to promote design standards within their developments, out of a recognition that these types of requirements may help to preserve the value of the properties. Design standards include: paint color, restricting housing additions, windows sizes, and ornamental restrictions.

### Takeaways:

- Design standards can help to promote new developments that are in keeping with existing community character. Since such standards lead to more predictable design, they can help to reduce resident resistance and encourage greater integration of new developments.
- Care should be taken that the imposition of design standards does not excessively increase costs and is not used as an excuse to stifle infill development through unnecessarily strict regulation.

### 1.3.4 Redevelopment of Historic Centers

**What it is:** Redevelopment of historic city centers can provide much-needed, centrally located housing and transit-oriented development (TOD) because existing bus and train systems are typically concentrated in such areas.

**How it works:** Affordable residential development in downtown historic centers can help to mitigate this problem. Many low income people in developing countries live on the city outskirts and must expend a relatively large percentage of their time and money for transportation (Gilat and Sussman 2003, 103). In the U.S. and Europe, policies to draw middle class households to the city center have served as an urban economic redevelopment strategy in declining industrial cities, capitalizing on industrial heritage as an attraction (Rousseau 2009, 771 and 776).

On the other hand, efforts to redevelop historic centers may pave the way for gentrification or increased prices. Jones and Varley (1999, 1564) point out that gentrification as a redefinition of an area's identity can occur when the middle class makes use of an area for recreation or education; the gentrifiers do not need to occupy the space in order to exert political and cultural influence. Public policy needs to ensure a balance between useful redevelopment and problematic displacement.

**Example:** In one example of historic development, the government of Kingston, Jamaica has sought to revitalize the city's deteriorating inner communities and downtown business district (Osei 2009, 316). Most urban regeneration initiatives have focused on the downtown, the oldest part of the city (Osei 2009, 217). Downtown Kingston faced: "congestion, disruption of vehicular and pedestrian traffic flow, unsanitary conditions, inconvenience and lack of visual appeal," underpinned by a lack of police presence

and limited government financial resources (Osei 2009, 318). According to Osei (2009, 333), a critical challenge for the government is creating multi-sector development policies and partnerships; at present, the redevelopment framework is weak, and the private sector shows limited interest (2009, 333).

**Example:** Federal rehabilitation tax credits (RTCs) in the U.S. are one incentive that encourages the redevelopment of historic buildings, providing "a 20% income tax credit for rehabilitating historic buildings listed on the National Register of Historic Places" (Ryberg-Webster 2013, 267). In particular, conversion of underutilized commercial buildings for residential purposes has occurred (Ryberg-Webster 2013, 274-6).

#### Redevelopment of historic centers: Implications for Mexico.

Historic centers are notoriously difficult to develop in Mexico, and developers often cite overregulation and bureaucracy as significant barriers to investment and development. Renovation or new development must comply with local zoning and construction codes, state ordinances, and national level requirements to preserve the physical character of historic areas or sites, often impeded greatly by the strict limitations maintained by Mexico's National Institute for Anthropology and History (INAH). When development does indeed take place, it is often for retail, commercial, or hotel uses that can afford to pay for these costs, excluding less profitable land uses such as housing. Taking lessons from successful redevelopment projects elsewhere, Mexico's historic centers could benefit from strategic densification that clusters new and higher density buildings along busier corridors, while preserving historic development in other designated areas.

### Takeaways:

- Historic downtown revitalization is challenged by limited government resources, as well as coordination, corruption, and lack of code enforcement (Gilat and Sussman 2003, 103).
- Emphasizing code enforcement and creating a clear framework that explicitly considers which target groups will be served through residential development can help to guide the redevelopment of historic downtowns.
- Partnerships and alliances with local institutions are key to successfully integrating housing projects within historic centers. These partnerships, with knowledge and expertise from local actors, can help facilitate integration during the rehabilitation process, which ranges from undertaking property inventories and social integration strategies, to financing for participatory design.

### Benefits and Challenges of Promoting Acceptance of Urban Infill

Resident opposition can slow the development process; however, community engagement can also help to improve the quality of a development and its position within the neighborhood.

Methods to promote acceptance of urban infill, at their best, help residents focus on important issues in voicing their opinions and concerns.

These methods can also help community members to understand that good design and planning can minimize some of the problems they fear.

#### Benefits of Promoting Acceptance of Urban Infill

**Reduces development time and costs:** For developers, time is money, and decisions are made based on current market costs and conditions. Anything that delays a project will most likely increase the cost of the project as well as increase

the risk the project will fail, as the market could change dramatically in the time it takes a development project to work its way through the regulatory review process. By consulting the community on the types of housing projects they would like to see, on the designs standards the development should follow, and the amenities it should provide, developers can plan and design projects that fit the vision of the community and thus avoid unforeseen local objections to their project. In Minneapolis, Minnesota, Forsyth et al. (2010) observed, “too often developers came to Minneapolis’ strong, city-supported neighborhood groups with fully designed proposals that met fast rejection or years of delays. This drove up costs for development, meaning that neighborhoods that might like new housing options were not getting them” (Forsyth et al. 2010, 270-1). Because of this local objection, developers were not even bothering to propose projects in areas with strong opposition movements, to the detriment of the residents.

Infill development can already be a daunting prospect for developers, especially if they have only had experience working in greenfield development. While development in infill areas has been shown to save government costs due to existing infrastructure, the potential delays from unclear regulations or community opposition can quickly drive up costs for developers and thus developers may still find it easier to continue to propose greenfield projects. By working with communities to understand their fears and desires for new development, as well as sharing the financial constraints under which developers work, programs that proactively seek to promote densification can make the development process much easier and less contentious.

**Promotes equality and social justice:** People should have both the potential to influence development and the potential to have more

choices in where they live. When government promotes urban infill in a way that engages all residents, it gives a voice and power to populations that are traditionally marginalized and left out of such discussion—both current local residents, and potential residents who would move into new housing. Furthermore, proactive participatory planning can help to ensure that one particular group, which may not represent the interests and concerns of the community as a whole, does not stop projects. Where government plays a minimal role, only populations that have the knowledge, resources, or political connections are able to influence the way planning policies play out in their neighborhoods.

In their review of “third party objection and appeal rights” (TPOAR), a form of reactive participation in which residents of a neighborhood are able to contest local government decisions granting planning permission, in the Melbourne Metropolitan Area, Hurley et al. (2013) concluded that only certain groups used TPOAR to contest higher density developments (Hurley et al. 2013, 11). In their words, “It would appear...that TPOAR are being used in an attempt to protect established lower-density neighbourhoods from HDH [high-density housing], an action that reinforces existing socio-spatial inequalities.” Therefore, it would seem that when government relies solely on reactive participation, the poor and minorities are not able to voice their opinions as effectively as those who are wealthier, better educated and/or members of a racial majority.

Often advantaged populations are able to shift unwanted development or land uses away from their neighborhoods, possibly to the more disadvantaged neighborhoods. In a case study review of different medium density social housing projects in South Africa, Tonkin (2008) concluded that “a community will only take ownership of a

community project if they are consulted regularly and are able to participate in decision making... Participation has to be a golden thread running through the entire delivery project cycle to ensure ongoing legitimacy within the community” (Tonkin 2008, 97-8). Failing to proactively engage with the community runs the risk that these developments will only be built in areas where residents lack the resources, social capital, and knowledge to fight proposed developments. In addition, evidence suggests that not consulting with residents results in feelings of resentment or distrust towards government. Instead, governments should facilitate and encourage the broadest possible participation in planning processes.

### **Challenges of Promoting Acceptance of Urban Infill**

**Requires time and resources:** Community outreach and education are common strategies to prevent opposition, but most efforts fall short. They require government to have a strong commitment to such programs, and to have trained personnel and resources available. Proper outreach is also time-consuming and, depending on when it occurs in the planning process, can take weeks if not months. It is far too easy for governments to see outreach and participation as an unnecessary expense, not worth the time and resources. Others believe they do an adequate job already, when in fact their efforts are only reaching the most educated or advantaged populations.

In New South Wales, in Australia, the state government believed it had invested the proper amount of time and effort into public outreach regarding its *Metropolitan Plan for Sydney*. However, in a 2011 survey of 721 residents of the Sydney metropolitan area, Ruming (2014) found that less than half of respondents were aware of the policy frameworks for planning in New South Wales, and even fewer (less than a quarter) were

aware of the state's plan for the Sydney metropolitan area (Ruming 2014, 257-8). Even after making reforms to their planning system, the state government was still not reaching a large number of residents.

These results led Ruming to conclude that: "Adequate engagement with the planning system by the public must be preceded by significant promotional and educational work associated with informing the public of the value of: (1) strategic planning, (2) community involvement, and (3) higher density housing. The consultation process must be attractive to residents and be seen to have a chance of implementation in order to overcome constant critique of the strategic planning process centered on accusations of over-consultation and limited on-the-ground outcomes" (Ruming 2014, 264).

Even in locations with robust planning systems, such as the one in Sydney, it is still challenging to reach a large number of the population. This suggests that even when cities believe they are doing an adequate job, there is always room for improvement. Even though it is difficult, reaching people and educating them on planning policies, especially those regarding densification and infill development, is key to shifting preferences away from single-family housing and encourage acceptance of more compact forms of living.

**Does not stop opposition entirely:** Even if proactive participation efforts by government are successful, opposition to specific projects might still occur. This can sometimes be a result of policy changes between the time residents were consulted and the time the project is proposed, or due to changes in the people who live in the area. It can also be attributed to residents not being able to fully comprehend or visualize the possible consequences or outcomes of policies, or to irreconcilable personal preferences that will never align with the goals of infill development.

In a case study of the Manningham local government area in metropolitan Melbourne, Australia, Hurley et al. (2013) found that even though there had been an upfront engagement process regarding infill development, years later, infill projects attracted numerous objections from local residents. Hurley et al. (2013) suggest that this is due to a number of factors, including issues regarding the initial engagement process, changes to local regulations after the initial engagement without consultation with residents, and difficulty with using this strategy over a period of years (Hurley et al. 2013, 10).

Another problem identified in the case was that "the majority of

Opposite Page:  
Examples of new development used in educational materials for the Minneapolis Corridor Initiative described in the appendix.  
*Photo: Collection of Ann Forsyth*



residents are not aware of the implications of planning policy, or at least struggle to conceptualise the implications, even when they have been party to its development" (Hurley et al. 2013, 10). In a review of the Corridor Development Initiative in the Twin Cities, Minnesota, Forsyth et al. (2010) note that "over time as people move out of neighborhoods some of their local knowledge is lost; as the process is so forward-looking some key people can hold much of this knowledge. The half-life of such a process is probably years, not some decades" (Forsyth et al. 2010, 282).

The examples above illustrate that even with robust processes of engagement to encourage infill development, opposition may still exist and community memory or knowledge of previous public engagement efforts can fade. To a certain extent, it will be impossible to completely neutralize all objections residents have to development. In fact, such objections are probably a good thing, as they show residents are engaged in the planning process. However, some of the issues point to the need to conduct proactive participation activities on a frequent basis, not once every 5 or 10 years. Neighborhoods are constantly changing, and the needs and desires of residents do not conform to most timescales set out in planning processes, making constant monitoring and check-ins with the community necessary.

**Predominant consumer preferences and market forces:** Even if residents agree with and support the notion that compact development is better than urban sprawl, they might still maintain a preference for low-density housing, or developers might perceive that residents prefer low-density housing, whether or not this is correct. Dependence on the free market alone to deliver new housing options is another barrier, as the slow pace of housing cycles means it will take a long time for densification policies to have a great effect, especially if the market is not particularly strong in a metropolitan area (Dodson 2010, 496). The free market tends to deliver a narrow range of higher density housing options.

In his study of the socio-economic characteristics of people living in high-density dwellings in the Australian cities of Sydney, Brisbane, and Melbourne, Randolph found that most such dwellings were overwhelmingly rental properties of one or two bedrooms in 2001. Forty six percent of households contained just one person and such units housed almost twice the proportion of people between the ages of 25 and 34 as single-family houses (Randolph 2006, 478-9). Randolph argues that the profile for those living in apartments hardly changed between 1991 and 2001 in spite of small renter households being only

part of the larger housing market (Randolph 2006, 481). Randolph pointed out that the market is often conservative about new types of dwellings such as increasing higher density ownership units. In the context of creating more sustainable cities, Dodson claims, “private development processes appear to be very poor and uneven mechanisms by which to increase suburban densities, especially within the short timeframes imposed by the climate and energy crisis” (Dodson 2010, 496).

The findings discussed above suggest that planners and designers will need to do more to make high-density urban living more attractive and affordable. In addition, the greater influence of residential investors and developers in creating new higher density housing could represent a considerable barrier in creating housing that is attractive to a wide segment of society. Their practices will need to change, and may require government incentives or subsidies to achieve.

### Promoting Acceptance of Urban Infill: Conclusions

In locations with vibrant democracies, some community activism may well be directed to urban development and planning issues. Involving people in planning, as well as helping them understand the real benefits and costs of higher density development, can focus potential opposition on important issues. Proactive participation efforts can also help to ensure that the voices of more marginalized groups are taken into account, not just the opinions of advantaged residents. Furthermore, broad engagement can reduce the likelihood that one group with differing views will be able to put a stop to infill development policies. It is important that residents are engaged over time, so that they are informed of changes in policies or projects and so that the community retains memory of the infill policies. For infill development, design and planning can make a big difference in terms of the effects on neighbors and neighborhoods, so community engagement is of particular importance.

In addition to proactive planning exercises and educational campaigns, promoting acceptance of infill development can take very tangible forms, such as completing pilot projects that allow community members to get a better sense of urban infill by seeing a sample project. Design standards can provide long-term voluntary and mandatory guidelines for developers in creating infill projects but should be carefully crafted to reflect community needs without stifling development.



## 1.4 Promoting Alternative Tenures



### Promoting Alternative Tenures

#### What it is

- **Alternative tenure includes options for home occupancy outside of homeownership, such as multifamily rental housing, rent of individual rooms or attached units owned by a private homeowner, or incremental expansion of existing homes to accommodate more occupants.**
- **Promoting alternative tenure offers an important strategy for promoting densification at the household, neighborhood, and metropolitan level.**
- **The housing needs of a wider range of individuals can be met by providing a wider range of housing types (both in terms of tenure and physical design).**
- **Non-homeownership tenure is a powerful tool for bridging between the housing needs of informal workers and the formal housing market.**

Accessory apartments are often difficult to identify because they blend into the environment e.g. they are part of a larger house or in the back yard. There are many such examples in Latin America. This image shows an accessory apartment over a garage in Poundbury, England.

*Photo: Collection of Ann Forsyth*

Tenure options beyond homeownership of completed units are critical to reaching a broader swath of the housing market. These options not only help to meet housing demand, but also offer strategies that assist in efforts for infill and densification, create more flexibility for the labor market, support municipal budgets, and form part of a broader push toward coordinated urban planning and development. Support for alternative housing policies may face a challenging regulatory environment, in which ownership of detached homes has long been seen as the singular strategy for bolstering the real estate market and providing housing for low-income families (Baird-Zars et al. n.d.). Promoting alternative tenures requires governments and municipalities to take a closer look at the zoning regulations in their communities and establish enabling legislation.

**Addressed here are interrelated forms of alternative tenure for housing. Though not comprehensive, these strategies represent the range of options available to diversify the housing market and provide opportunities for households, developers, and governments alike:**

- **Rental housing**
- **Accessory apartments**
- **Progressive housing**

#### **1.4.1 Rental Housing**

**What it is:** Rental housing can offer an important alternative to homeownership for any household, but particularly those who are younger or lower-income. Rental housing fits logically into broader efforts for densification, as it often implies higher density, verticality, and cost effective construction on accessible urban sites.

**How it Works:** Rental housing policies and programs can be implemented at the local level to encourage greater investment in and development of public, social, or private rental housing. Such strategies might include tax incentives or grants

for developers of affordable rental housing, subsidies for households to access the private rental market, investment in infrastructure (spearheaded or implemented by government) to ensure serviced land is available for multifamily rental housing, or the construction of public housing by government (Bouillon 2012).

As becomes clear through the list of possible strategies, rental housing, particularly for lower-income households in need of subsidy, is often facilitated through public-private partnerships. Governments frequently provide low cost loans, tax deductions, construction subsidies, or even serviced land. These help facilitate the process for private sector construction of rental housing (UN-Habitat 2005). Additionally, government has an important role to play as a leader in facilitating the necessary regulatory and legislative reforms, whether at the state or local level, to ensure that rental and multifamily housing is feasible in existing zoning codes, or can conceivably be subsidized in the municipal tax code, for example.

By offering greater variety and lower cost housing options to new households, rental housing can support greater labor mobility as individuals are able to relocate more easily for work (Baird-Zars et al. n.d.). Rental housing also responds to situations in which the housing market is experiencing high rates of abandonment, suggesting that available housing is not suitably located or serviced for the labor market; or high rates of informality, suggesting that households are not able to find accessible or affordable housing. Government-managed, constructed, or subsidized rental housing is generally more common outside of Latin America and the Caribbean, with so called “public housing” or “social housing” constituting 20% of total housing in the United Kingdom, or higher than 30% in the Netherlands, for example (Directorate General For Internal Policies 2013, 9). In some of these cases, social housing is coordinated and promoted

## Informal Housing in Mexico

Though irregular tenure and informal housing is predominant in Mexico, the Revitalizing Places report focuses principally on formal housing and the strategies necessary to promote high quality social housing and sustainable urban development.

INFONAVIT is a major player in the formal housing market. For example, INFONAVIT was responsible for 74% of mortgage credits originated between September 2013 and 2014 (OECD 2015, 5).

It is important to note, nonetheless, that an estimated 67% of the country's housing is informal or irregular, according to Mexico's Secretary for Rural, Territorial and Urban Development (SEDATU). This irregularity means that housing is constructed on land that is not properly regulated or registered (Gutierrez 2014). Against this backdrop, one recent effort by the federal government has been to create the *Crezcamos Juntos* (Let's Grow Together) program, to encourage informal workers to register their earnings and gain social security benefits and eligibility for a formal government mortgage (INFONAVIT 2016). In addition many of the broad policies for densification, development on new land, and urban redevelopment are also applicable to informal housing development.

The Brazilian ZEIS case study included in **Appendix D** is a relevant example of how to address and include informal and formal housing tenure in a development project. Examples from observations in Mexico in **Appendix E** also demonstrate the range of informal and formal housing across the country.

by the nonprofit housing sector and enabled through supportive tax codes that allow for exemptions or deductions that make social housing production feasible (Directorate General For Internal Policies 2013, 11). In the Latin American context, public or social housing (*vivienda social*) typically takes the form of homeownership rather than rental housing (Baird-Zars et al. n.d.).

**Example:** In countries without this legacy of state-built rental housing, household level subsidies are one approach to facilitating rental housing options for a previously unattended market. A recently emerging program in Chile known as “*Chau Suegra*,” or “Goodbye Mother-in-Law,” is a rental subsidy promoted by the Ministry of Housing and Urban Development (MINVU) at the federal level, aimed at reducing overcrowding and supporting labor mobility for younger households. The 5-year, flat rate voucher is intended to be used in the private market, and to serve as a bridge to eventual homeownership for eligible low-income households between the ages of 18 and 30 (Ross and Pelletiere 2014). It will be critical to evaluate the performance of this subsidy over time to see how support for rental housing aids low-income households and potentially encourages more investment in rental housing by homeowners, developers, or investors.

### Rental housing: Implications for Mexico.

Though relatively uncommon throughout Mexico, there is a growing interest in the rental market across the country. Though many cities are seeing growth in the high end and luxury rental market, there are relatively few examples of multiunit (multifamily) rental housing that is accessible for middle or lower income households. Supporting a broader range of housing tenure in accessible urban areas could be a great benefit to the Mexican economy by offering more flexibility in the labor market for workers to relocate more easily, or preventing the housing abandonment seen when workers ultimately find the commuting distance from a purchased home too great. INFONAVIT’s *Arrendavit* pilot rental program is one such example of an emerging role for the rental market, in which the institute is enabling credit holders to opt to rent designated homes renovated by the institute after abandonment.

### Takeaways:

- Rental housing must confront the general tendency and policy bias toward homeownership in many markets, whether for reasons of availability, cultural custom, density limitations, etc.
- Rental housing is often made possible through partnership

between the public and private sectors.

- Regulatory reform is often necessary to enable the construction and incentivizing of rental housing.

#### 1.4.2 Accessory Apartments

**What it is:** Accessory apartments are an important strategy for promoting densification in neighborhoods with single detached houses and offer a wider range of housing types in a community. Accessory apartments are secondary housing units built, usually, on an individual housing lot and can be attached or detached from the primary unit. In almost all cases, these units have their own kitchens, bathrooms, living spaces, and entrances/exits (Wegmann and Nemirov 2011, 1). Accessory apartments typically require zoning and building code amendments, as most codes prohibit accessory apartments.

Additionally, ensuring titling and property rights are prerequisites to promoting accessory apartments, as well as clear property titles. Sound landlord and tenant protections are also important. Technical, financial, and design assistance is required to avoid overcrowding, construction faults, inadequate service provision, and neighborhood conflicts.

**How it Works:** These units—also called accessory dwellings, secondary suites, or granny flats, among other names—represent an important opportunity to increase densities in low-density neighborhoods with a predominant typology of one home per lot. In addition, they provide the community with a more diverse supply of housing types, as well as a potential source of supplementary income for homeowners. For instance, according to Camargo Sierra, documenting socioeconomic characteristics of informal housing residents in Bogotá, Colombia, he discovered that 25% of property owners reported an additional rental income from bedrooms or units in their own home. Even more, this percentage increased by 10% when residents reported an income less than one minimum wage (Camargo Sierra 2015). While residents of detached housing tend to object to their neighbors constructing accessory apartments, accessory units tend to be less contentious than other forms of infill development, such as multiunit dwellings, because of their small size.

**Example:** The City of Santa Cruz in California (U.S.) is often lauded for its accessory apartment program. The program has five components: zoning changes, community outreach, design prototypes, technical assistance, and financial assistance (Andrews 2005, 9). To make the process of building accessory apartments easier for inexperienced homeowners, the city commissioned local architects to create various

prototypes designed for a variety of situations. These plans are preapproved by the building and planning department, and are available for a small fee to the public to purchase and use. A manual describing the program and the design requirements was also created. For financial assistance, the city provides homeowners with low interest loans and fees are waived for people under a certain income level (Andrews 2005, 9).

**Example:** Much like Santa Cruz, Portland, Oregon (U.S.) has long had a program to allow the construction of accessory apartments. However, because of the strict regulations and requirements, the program was not very popular until 1998, when the city decided to relax regulations in an effort to encourage more accessory units. Portland eliminated minimum size requirements and owner-occupancy requirements (Sage Computing, Inc. 2008, 4). Now, accessory unit construction is allowed in all single home lots, so long as the accessory structures are no bigger than 800 square feet or the primary residence, whichever is smaller. In addition, all permits that meet the standards of the program are given as-of-right without going through further land use review processes. According to the city, these changes have been positive, and helped to encourage more accessory construction (Sage Computing, Inc. 2008, 4).

### Accessory apartments: Implications for Mexico.

Accessory apartments are one strategy that can help integrate higher density living into Mexico's predominant single home typology without significant costs or need for regulatory reform. This could be a very viable way of increasing densities in smaller cities and towns. It requires, however, a focus on individual owners rather than medium and large-scale professional property developers. At the federal level, INFONAVIT's strong position in the Mexican mortgage market gives them a unique capacity to create a program

to support homeowners in developing additional units, and has the potential to unleash a wave of development. INFONAVIT would be particularly suited to offer second mortgages or other financial support for incrementally built accessory apartments. **The Brazilian ZEIS case study included in Appendix D is a relevant example as are examples from observations in Mexico in Appendix E.**

### Takeaways:

- Accessory apartments can provide an option for incremental densification, particularly in areas where more intensive forms of infill development are not possible.
- Zoning and other building regulations in most areas with high rates of owner occupancy and residential lots with single structures prohibit the construction of accessory apartments, regardless of whether the unit is detached or a part of the primary dwelling. Allowing the legal, as-of-right construction of these units is an important first-step in promoting accessory apartments.
- Given that construction of accessory apartments is initiated not by developers but instead by homeowners who may not have any construction or rental management experience, challenges may arise. Negative externalities may include a loss of privacy, parking complications, or other undesirable outcomes. In addition, in areas with substantial infill potential, such modest densification may delay more intensive development.
- Technical assistance can foster better development.

### 1.4.3 Progressive Housing

**What it is:** Progressive housing can be viewed as a version of "assisted self-help housing,"



Incremental construction over existing structures allows people to expand living space and create room for business. Providing resources to do this in a way that is structurally sound and does not overly harm neighbors is a role for government. This image is from Zumpango, State of Mexico.

*Photo: Irene Figueroa Ortiz*



Juan Pablo II in Facatativá, Colombia, showing incremental development over time.

*Source: Lizarralde 2011, 184.*

where residents receive assistance to build, expand, or renovate their homes (Bredenoord and Lindert 2010, 278), while still remaining in control of the expansion process (Andrade n.d. 173). A defining feature of progressive housing is incremental development: households incrementally expand their homes according to need and financial resources (Brendoor and Lindert 2010, 279; Lizarralde 2011, 176).

**How it Works:** In progressive housing schemes, various levels of government may provide land, new infrastructure, building materials, legal land title, technical assistance, micro-financing, or up-front grants (“direct demand subsidies”) (Bredenoord and Lindert 2010, 278 and 285; Ferguson and Navarrete 2003, 316-21). Other financing mechanisms might include community lending programs or consumer credit to access building materials (Ferguson and Smets 2009, 288).

Progressive housing may create new access to housing for poor and informal residents that the private sector is not interested in serving. Homeownership provides households with an appreciable asset, and the dwellings can also serve as places of work (Brendoor and Lindert 2010, 281). Incremental housing is very common in developing countries, making up anywhere between 50-90% of residential development (Lizarralde 2011, 176). In Mexico, more than 40% of dwellings are built by the occupants of the buildings (Andrade n.d., 173).

**Example:** Through case studies of incremental housing in South Africa and Colombia, Lizarralde (2011) finds that decisions made during initial construction shape the possibilities for progressive expansion later. Lizarralde (2011) examines the Negreg development in Cape Town, South Africa and the Juan Pablo II (JPII) development in Facatativá, Colombia. For both cases, the government and nonprofit stakeholders focused on initial development and provided little follow-up financial support or code enforcement for incremental construction post-occupancy (Lizarralde 2011, 180). In Negreg, the configurations of the units on the lots complicated add-on construction (Lizarralde 2011, 179). Overall, the JPII case study comprises a more successful example of progressive housing in that many residents were able to almost double the size of their homes as initially constructed, and “home-based economic activities were quickly developed in the units” (Lizarralde 2011, 180).

**Example:** In Buenos Aires, Argentina, Habitat for Humanity Argentina (HPHA), an affiliate of Habitat for Humanity International, uses a “seed house” or “*casa semilla*” model when working with low-income families. The so-called “seed homes” are built with construction

supervisors from HPHA, teams of volunteers, and the families themselves. Depending on the family size, homes are built with one or two bedrooms, with techniques and tools that are intentionally accessible for the families, so that the homeowners can continue to expand the homes independently and incrementally over time (Habitat for Humanity 2012).

### **Progressive housing: Implications for Mexico.**

Mexico has a long tradition of incremental or self-built housing, where dwellings evolve over time. Programs are already in place for low-income homeowners to access financial assistance for self-built housing through CONAVI and FONHAPO, as well as many state level housing institutes, typically in more rural areas. SEDATU's recent "*Un cuarto mas*" program (this time assisting owners of social housing units that initially had only one bedroom homes) is another example of how federal programs are acknowledging the tendency and need for families to expand their homes over time. In addition, many owners of INFONAVIT housing add rooms even where the units were not specifically designed for this kind of expansion.

To better promote infill and alternative tenure in urban areas, adaptations could be further encouraged by changes in regulation and technical assistance, allowing homeowners to more safely approach the building process and empowering municipalities to better ensure safe and sustainable construction practices. Housing additions and retrofits are particularly common in social housing developments, where homeowners may make changes in order to provide more security, make the home more accessible for disabled or elderly family members, house a growing family, open a small business, etc.

#### **Takeaways:**

- For formal progressive housing to be widely

adopted, it is important that residents feel that they have secure land tenure. An essential consideration is figuring out how to reach the groups targeted by progressive housing initiatives (Brendoor and Lindert 2010, 280).

- Locating progressive housing projects on the urban periphery may take advantage of lower land prices in these areas but may lead to high infrastructure costs (Brendoor and Lindert 2010, 279).

To promote densification, it is important that buildings be properly designed so that additions can be safely made and separate units can be independently and affordably added over time.

## **Benefits and Challenges**

### **Benefits of Promoting Alternative Tenures**

**Relatively easy construction:** Depending on the type, alternative tenure can usher in infill development in a relatively straightforward manner. The construction of multifamily rental or single homes may usually require private developers to undergo the expensive and complicated process of assembling parcels of land to be developed or redeveloped. Building accessory apartments or progressive housing, by contrast, is relatively simple, as the person initiating the construction already owns the land required. In addition, most of the infrastructure required already exists, as the new or expanded unit can use the water, electricity, and sewer infrastructure already servicing the primary dwelling.

Given the small scale of accessory or progressive construction, they offer a unique opportunity to retrofit existing low-density neighborhoods without creating large impacts on the character of the neighborhood (as opposed to building multiunit housing complexes). However, it is

important to note that this is only true when the regulations and requirements governing the construction of accessory apartments are not too onerous. If they become too complex, or too expensive, then this benefit will be lost.

#### **Flexibility for the rental and labor markets:**

First, the availability of a wider range of decent and affordable housing options in the housing market gives lower income or smaller households much needed flexibility to find housing that suits their needs and budget. This alleviates the burden of homeownership for households that are not prepared, whether with regard to finances, long-term plans, or preferences. Additionally, a greater number of non-ownership tenure housing options can allow workers to relocate more easily for work, and with well-located residential development, to find housing closer to their workplace.

**Rental income for households:** Creating accessory apartments or new rooms or units via progressive housing presents the opportunity for a household to create a new source of income. In addition, the potential to earn income from the property may add value to it, as well as allowing families to afford mortgage payments on houses they normally could not manage. Rental income can make a large difference to homeowners with modest means, while also expanding the range of housing options available to those who cannot afford or are not seeking homeownership.

**Municipal income for governments:** Through the encouragement and enabling of more diverse development, governments will ideally be able to capture more tax revenue through construction licenses and fees as well as ongoing revenue through property taxes. It is critical that property taxation is in place, particularly with higher density multifamily rental units, so that governments have the revenue necessary to provide services and ensure that adequate infrastructure is in place for new construction and

new residents. Additionally, by creating formal avenues for households to construct accessory units or make progressive improvements to the home, governments are able to exercise greater oversight over the process (and ensure safety standards) while also gaining some revenue (albeit minimal) from the licensing or processing fees for construction permits from new development.

#### **Challenges of Promoting Alternative Tenures**

**Resident initiated:** The construction of accessory apartments and progressive housing expansion depends to a large degree on the preference of the homeowner. Even if the process is simple and easy, homeowners may still be hesitant to build an accessory unit because they have little experience with construction, or that they do not wish to become a landlord and deal with renters. So even when zoning and regulation allow for the construction of accessory apartments, governments cannot force homeowners to build accessory units. The voluntary nature of accessory apartment construction is one of its largest drawbacks, and one that is not easily overcome. Prototypes like those used in the Santa Cruz example (**Section 1.4.2**) become important, as they allow those unfamiliar with construction or housing design to easily select a pre-approved plan to build. Regardless, government policy and programs should realize that accessory apartment owners likely are not private developers, and have different concerns and a greater need for technical assistance than that of an experienced developer.

**Costly for urban infill:** Though rental housing is very appropriate for urban infill, the costs can be prohibitively high. Although rental housing very effectively enables an area to densify, the costs of purchasing and assembling sufficient land, ensuring proper zoning, and constructing at higher densities in central areas can prove very challenging for housing developers. This is particularly true if the housing in question is

intended as affordable or mixed income housing, and thus offers less assurance of a sufficiently profitable return. Additionally, this in turn may imply that multifamily rental housing may prove too costly for governments to be able to sufficiently subsidize or incentivize.

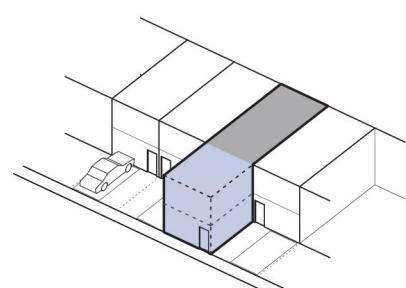
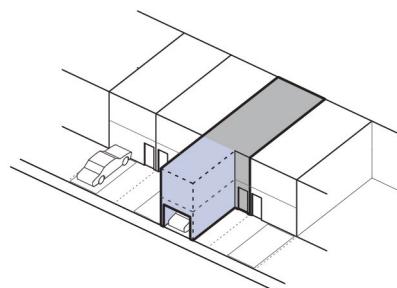
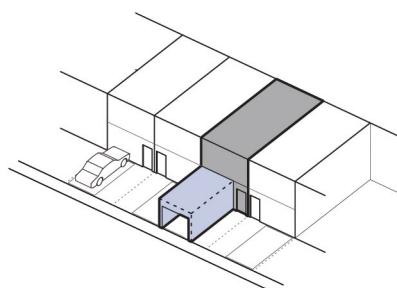
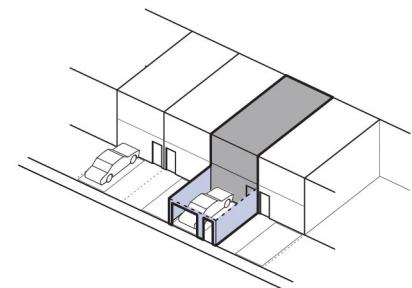
**Construction quality:** The quality of owner-built progressive housing and accessory apartments is an ongoing challenge. There is also a need to upgrade existing stock of this type—either structurally or in terms of infrastructure. Because each situation is unique it can be expensive to assess each issue.

**Regulatory constraints:** Rental housing faces significant regulatory constraints, in large part due to policy bias toward homeownership. Particularly for higher density multiunit construction, existing zoning may not permit the building heights or unit numbers needed for such development. The challenges of site-specific zoning changes or regulatory reform may be too costly or time consuming for developers or nonprofit organizations to take on without significant government support. To a certain extent, it will be impossible to completely remove regulatory barriers to building accessory apartments.

However, efforts should be made to ensure that the barriers are not too onerous. Many of the same reforms to the regulatory reforms needed to facilitate infill development, described in **Part 1.2 on Simplifying the Urban Development Process**, apply to the construction of accessory apartments as well. One significant barrier to the construction of accessory units is parking requirements.

### Promoting Alternative Tenure: Conclusions

Alternative tenure options should be included in any strategy to promote densification, as they constitute a significant and at times simpler way to create affordable housing and to increase density in low-density neighborhoods. Accessory



Typical construction sequence of incremental housing.  
For more detail see Appendix E.  
*Diagrams by Irene Figueroa Ortiz*

apartments, for example, unlike other types of infill development, are less costly and generally more acceptable to other neighbors.

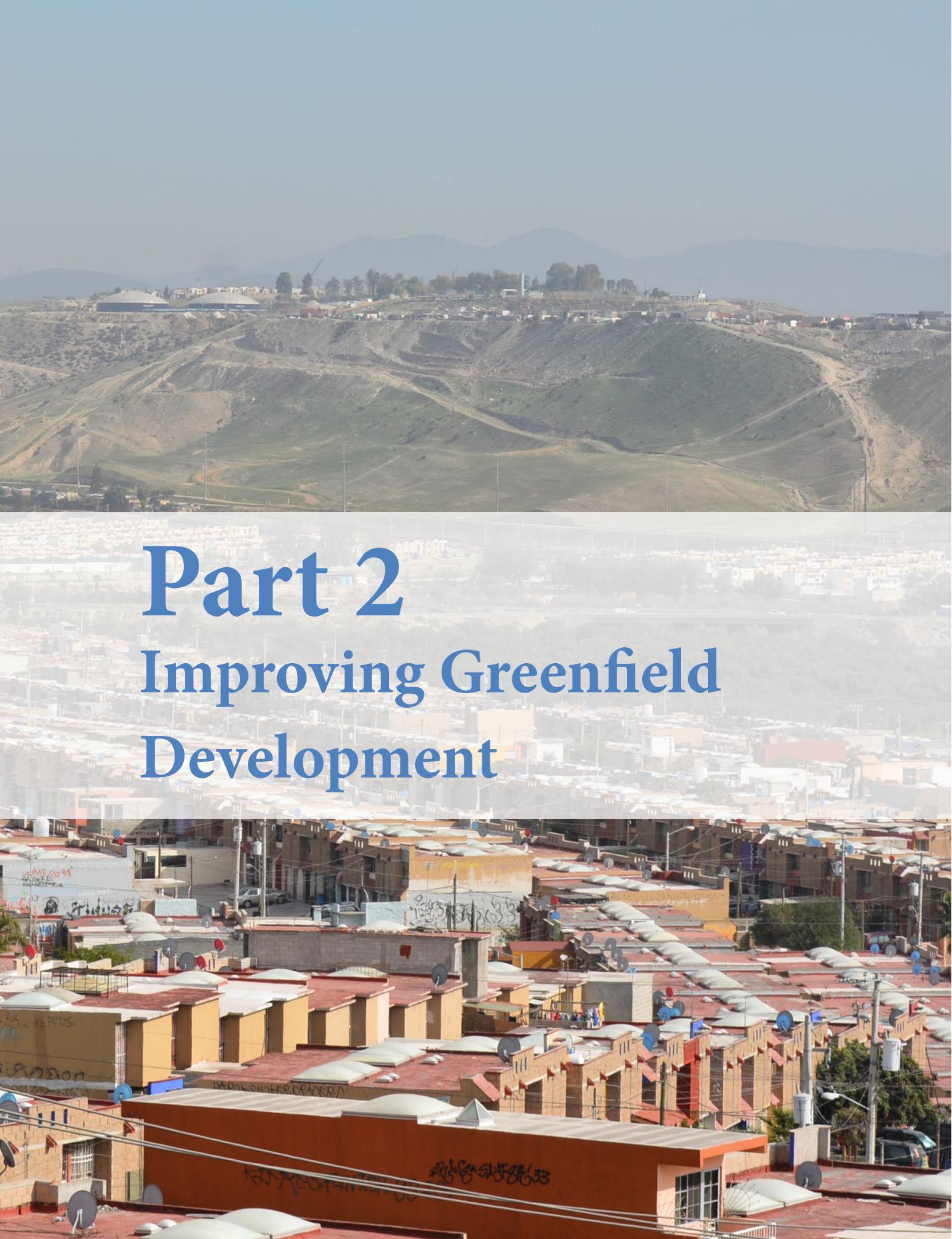
Although formal, high-density rental developments are uncommon outside of Mexico City and major urban centers, accessory apartments and progressive housing are already part of the Mexican landscape. They can be constructed within existing structures, behind them, in an addition on top, or in the yard by converting an outbuilding like a garage or laundry, or building a new small house. Progressive adaptations or accessory units are flexible—the same unit might house an older or younger family member, a tenant providing income, or a small business.

Their great advantage is that they can be developed incrementally as long as regulations allow and financing is available (i.e. loans for construction and renovation of such units). They are particularly appropriate in lower-density areas and in smaller towns and cities. Where household sizes have been decreasing, they can help to maintain populations in the area by having more units with fewer people per unit.

The main disadvantage of accessory units is that, by adding value to a property, they make it less likely that it will be redeveloped at a much higher density (e.g. having townhomes or apartments placed on the lot). This is mainly a disadvantage in key locations such as around train stations and in the centers of large cities. In these areas, planning controls and other incentives, outlined in the next sections, can be put in place to make it attractive to redevelop at even higher densities.



Photo: Francisco Lara



# Part 2

## Improving Greenfield Development

## Part 2: Improving Greenfield Development

It will be difficult for densification policies alone to supply an adequate number of housing units to meet the growing demand for housing in urban areas in most of the world's metropolitan areas. Data on Mexican territorial reserves, analyzed in **Appendix F**, shows that in many states little land is available in existing urban areas so at least some of the projected new housing demand will need to be met by development on new land (U3). Data on building permits issued in three metropolitan areas in the United States demonstrated that "even in metropolitan areas with successful records of infill development, infill as a percentage of total area growth remains a minor portion of total growth" (Heid 2004, 3). These findings suggest that cities will need to consider alternative practices of sustainable development.

While the previous chapter made the case for densification and for ending urban sprawl, it did not mean to suggest that this is the only type of urban growth that should occur. Greenfield development, or development on previously undeveloped sites, must be an equally important aspect of city-building in the 21st century if urban areas are to properly and adequately house new generations of city-dwellers.

This does not mean, however, that urban expansion should continue as it has in the past. As **Table 2.1** shows, there are significant differences between traditional urban sprawl and sustainable greenfield development. **Table 2.1** compares the characteristics of sprawl outlined in **Part 1** of the report with the features of more sustainable greenfield development. This often requires significant changes to the way urban expansion is planned, permitted, and developed.

Broadly, strategies that governments have used to improve greenfield development can be divided into two groups. First are strategies that ensure public infrastructure, services, and amenities are provided in an adequate and fiscally responsible manner. Second are strategies that ensure new developments, planned communities, and subdivisions built on greenfields are designed in a way to promote economic, environmental, and social sustainability.

**Table 2.1 Differences between urban sprawl and sustainable greenfield development**

Characteristics of Urban Sprawl	Characteristics of Sustainable Greenfield Development
<ul style="list-style-type: none"> <li>• Low residential density</li> <li>• Unlimited outward extension of new development</li> <li>• Spatial segregation of different types of land uses through regulations</li> <li>• Leapfrog development (or development that leaps out onto new land, not connected to existing urban areas)</li> <li>• No centralized ownership of land or planning of land development</li> <li>• All transportation dominated by privately owned motor vehicles</li> <li>• Fragmentation of governance authority of land uses among many local governments</li> <li>• Great variation in fiscal capacity of local governments</li> <li>• Widespread commercial strip development along major roadways</li> <li>• Major reliance on filtering process to provide housing for low-income households. Filtering occurs when wealthier people move into new homes and low-income people move into the older and lower-quality houses left behind.</li> </ul>	<ul style="list-style-type: none"> <li>• Higher overall residential density with a variety of housing types, not just single-family houses</li> <li>• Outward extension of development is limited by numerous factors, including municipalities' ability to provide infrastructure and services, open space preservation, and environmental protection considerations, etc.</li> <li>• Land use types are mixed and integrated, with town centers, office parks, and other employment and commercial centers easily accessible from residential areas</li> <li>• Contiguous urban expansion</li> <li>• Land development happens in accordance to well-defined plans or in cooperation among landowners</li> <li>• Infrastructure and development supportive of many modes of transportation are created, including bus, rapid transit, bicycles, and pedestrians</li> <li>• Governance of land use is coordinated among all municipalities in a region</li> <li>• Commercial development is concentrated in nodes or town centers, serviced by a multi-modal transport network, not just roads for automobiles</li> <li>• Affordable housing is provided through a combination of an increased supply of housing, a variety of housing types, government requirements (like inclusionary zoning) and government programs, among others</li> </ul>

Adapted from Neuman (2005, 15), citing Burchell et al. (1998).



## 2.1 Fostering Well-Serviced Additions



### Fostering Well-Serviced Additions

#### What It Is

- Infrastructure-rich additions link land use decisions to capital planning.
- Such developments allow governments to phase expansion of urban areas to match their ability to pay for and provide services and infrastructure.

For municipalities responsible for providing infrastructure and services, extensive, low-density growth represents a long-term financial challenge as those residents will eventually demand urban levels of service. Providing adequate services and infrastructure in sprawling areas is not only costly but also inefficient, as fewer people are served per amount of money spent. As a result, municipalities must divert most of their revenue towards infrastructure investments, take on substantial amounts of debt to fund investments, and/or not provide adequate services to some neighborhoods. None of these choices are desirable. Stopping all urban growth is also not desirable. In response to this problem, municipalities have devised ways to manage growth,

Basic services such as roads, sewer, water, schools, parks, shops, and public transportation are key in promoting quality of life. Also important is having housing near jobs.

*Photo: Collection of Ann Forsyth*

timing urban expansion with the adequate and fiscally responsible provision of infrastructure and services.

**The following are strategies governments can implement in order to ensure urban expansion is properly and responsibly serviced with infrastructure and other public services:**

- **Concurrency requirements**
- **Exactions and impact fees**
- **Master-planned communities**

### 2.1.1 Concurrency Requirements

**What it is:** Concurrency requirements are legal requirements to link new development to the provision of public services and infrastructure, ensuring that development does not outpace the ability of municipalities to provide adequate services (Bucher, Willis, and Ratliff Corp. 2006, 1-2).

**How it works:** While the specifics of concurrency programs differ, in general, they all require municipalities to first adopt minimum level of service (LOS) standards for various types of infrastructure (e.g. roads, water, sewer, electricity) and services (e.g. schools, police, fire, health, recreation). New developments can then be evaluated based on their impacts on the LOS. If the additional people who are projected to live in a new development will cause the LOS of the infrastructure and services to drop below an acceptable level, that development will not be allowed until either government builds additional capacity into the system or the developer provides it. Such requirements also give government a greater level of influence as to where new development



In the housing development of Piedra de Agua in Mérida, Yucatán, the developer built branch offices of municipal water and sewage services within the complex. The intention was to provide an extra amenity for residents and as a way of accommodating municipal requirements.

*Photo: Nélida Escobedo*

will occur since it can decide where new infrastructure and services are built through its capital planning process.

**Example:** Florida is one of the few states in the United States to use a statewide concurrency program. The program is part of the state's Growth Management Act, passed in 1985 and intended to address the challenges the state faced due to uncontrolled growth, especially with regards to the increasing congestion on Florida roads (Chapin et al. 2007, 3). Specifically, the concurrency policy was "intended to either force governments to provide infrastructure necessary to support growth or to provide a state-sponsored mechanism to allow governments to slow development permitting until infrastructure was in place to service new development" (Chapin et al. 2007, 4). While the policy was ambitious and innovative, it has not been entirely successful.

Local governments struggle to finance the funding of infrastructure projects, many of which are backlogged; the concurrency requirements for transportation have not solved traffic congestion issues; and level of service requirements often make it difficult for developers to do infill and redevelopment projects because in many areas at least some sorts of infrastructure and services are already at capacity (Chapin et al. 2007, 4). To address these issues, several amendments have been made to the Growth Management Act, allowing local governments more flexibility and providing exemptions for some already urban area.

#### Concurrency policies: Implications for Mexico.

Concurrency policies could be a very useful tool for Mexican municipalities to gain more control over the residential development process. This kind of policy could be particularly useful in greenfield sites, as it would avoid the lack of infrastructure and services that plague more

isolated developments and exacerbate housing abandonment. In the Mexican context this will also require the involvement of service agencies, such as metropolitan water agencies, that often supply services to participating municipalities within a metropolitan area and frequently face severe challenges in providing adequate service.

Discretion in applying LOS requirements for services and infrastructure in infill sites and careful consideration in defining LOS measures is key to ensure that developers will not just build in areas where capacity (especially road capacity) is in abundance. Periodic review of requirements is also necessary to verify that the program is yielding the intended results. With strong yet flexible concurrency policies, municipalities, developers, and service agencies alike would be held to higher standards for providing and maintaining infrastructure, creating greater transparency in the urban development process.

#### Takeaways:

- Concurrency requirements can help ensure new development is well-served by infrastructure and services and bolster the amount of control governments can exert over the location of new development.
- Governments need to have a clear way of funding the infrastructure to which developments will be directed; otherwise development backlogs will result, or potential developers or investors will be deterred.

#### 2.1.2 Exactions and Impact Fees

**What it is:** Exactions and impact fees are two similar strategies which shift the responsibility for paying for and providing the additional infrastructure required to maintain an adequate level of service due to new development away from government and onto private developers. Exactions require developers to provide

infrastructure and services within a project, while impact fees refer to money paid by a developer to government so that the government may make improvements in infrastructure or services elsewhere (Brueckner 1997, 384).

**How it works:** Exactions and impact fees are levied directly against a developer, usually as a requirement for development permission. They are designed to replace government as the provider of infrastructure and services needed by new development. In theory, by making developers (and by extension, new homebuyers) pay for new infrastructure, government shifts the burden of these investments away from current city residents, who may or may not use the infrastructure, to new residents, who directly benefit from the new infrastructure (Ihlanfeldt and Shaughnessy 2004, 640).

While this does have the effect of raising the prices of new housing, much, if not all, of the increase can be attributed to an increase in home values thanks to the infrastructure investments (Ihlanfeldt and Shaughnessy 2004, 642). When impact fees are levied, they can be determined through a formula or through negotiations between government and developers. Those set by formula are less open to (perceptions of) corruption and thus to be preferred. Overall, the goal is for developers to internalize costs of new projects. This can make development more expensive, slowing the rate at which growth will occur (Brueckner 1997, 385), but it should also encourage more efficient development patterns (Bengston et al. 2004, 276).

### **Exactions and impact fees: Implications for Mexico.**

Exactions and impact fees offer a complement to concurrency policies, and this process has potential in Mexico to ensure that new developments internalize infrastructure costs and do not pass the cost burden onto the wider municipality. This may make local governments more willing to accept development and ensure higher quality of life for new residents with better access to services and infrastructure. The process of determining the fee needs to be logical, fair, and transparent in order to avoid discouraging new development entirely and to prevent corrupt proceedings between developers and municipal authorities. Additionally, higher fees for developers may ultimately imply higher costs borne by the homebuyer and future resident, and thus must be negotiated properly to ensure service implementation without creating barriers for affordability.

### Takeaways:

- Exactions and impact fees are important to reducing the expenses of new infrastructure and service provision for local governments, thus making them more willing to accept new development.
- Exactions and impact fees will typically lower longer-term costs to government, who otherwise would have needed to provide the infrastructure themselves. This savings may eventually be passed on to residents in the form of lower taxes.
- When fees are too great, they can act as a deterrent to development. Fees may also raise housing costs at the point of purchase, as developers pass on the additional expenses to homebuyers and renters.
- Determining the levels of exactions and impact fees that sufficiently maintain infrastructure quality without substantially discouraging future development or inflating housing prices is a key area of consideration for government entities. Adjustments in the fee policy will need to be made over time.

### **2.1.3 Master-Planned Communities**

**What it is:** Master-planned communities are large real estate developments that are comprehensively planned and developed to provide not only housing but infrastructure and services, employment centers, and/or commercial areas.

**How it works:** The main difference between a master planned community and other real estate developments is the scale. Because these developments are done on large parcels of land, often ranging from 800 hectares upwards (Heid 2004, 16), developers have a much larger degree of control over how they are designed, how infrastructure is placed (especially roads and open space), and how services are provided (like school sites and community amenities, etc.). They can also phase when infrastructure and services are built in line with development. In addition, many master planned communities are mixed-use, allowing the integration of commercial and office land uses into the overall design of the project. This not only allows for jobs and commercial activities to be located closer to residential areas, but also provides the developer with additional sources of revenue with which to finance infrastructure improvements, or pay impact fees and other exactions to government (Heid 2004, 16). This provides both environmental and financial sustainability.



The Woodlands was developed privately, though with an early government land guarantee that means it includes subsidized housing. Its core concept is to protect ecological systems and nestle development in wooded areas screened by vegetation. In recent decades it has developed a higher density town center as well.

*Photo: Collection of Ann Forsyth*

**Example:** The Woodlands, a new town style community outside of Houston, Texas, is an example of a large master planned community that has not only been successful, but has also had to provide much of the infrastructure and services used in the development. Pictured here, the Woodlands was developed by George Mitchell, an oil and gas magnate, and opened in the early 1970s. Unlike other planned communities of the time, Mitchell wanted to ensure that his development would not negatively impact the ecological systems that existed on his property. To this end he hired Ian McHarg, a noted landscape architect and author of *Design with Nature*, along with others to design the development (Forsyth 2002, 391). The design focused on protecting the hydrology of the ecosystem, limiting runoff and maximizing the amount of water that could infiltrate back into the aquifer (Forsyth 2002, 391). As a result, the project's design has greatly reduced its need for sewer and drainage infrastructure, relying instead on natural systems. In addition, since the development was located in an unincorporated area of a county that provided low levels of public services, most of these were provided by the developer who also set up private non-profit government entities to provide services such as water (Forsyth 2002, 391). The Woodlands was also federally supported and built with a substantial social housing component.

#### **Master-planned communities: Implications for Mexico.**

Mexico has a tradition of larger developments and while many have provided a full complement of services, some have not achieved these aims. New developments could benefit greatly from being held to international standards for master planning, particularly those with a substantial social housing component. To be effectively





Master-planned communities in the State of Hidalgo, Mexico. These developments include commercial areas, housing, school, and other services.  
*Photo: Collection of Ann Forsyth*

“master planned,” new developments would need to better align with ongoing planning efforts at the local level and be more strategic in the commercial or public spaces they provide, ensuring that they are well-located and will be utilized. Existing developments could benefit from attention to retrofitting and re-planning—including larger infrastructure investments such as adding clinics and schools, or smaller initiatives such as repurposing buildings and lots to create commercial areas or programmed public spaces (this repurposing may already happen in an informal way that could be better coordinated). In Mexico, one example of this type of standard-setting and coordination for sustainable, master-planned housing is already taking place through the *Desarrollos Certificados* (DC) program, financed by the *Sociedad Hipotecaria Federal* (SHF) and out of collaboration between CONAVI and SEDATU.

#### **Takeaways:**

- Comprehensively planned developments that incorporate multiple uses can provide environments where people can conduct most of their daily activities within the developments, while also linking to a wider municipality.
- Differences exist among the types of master-planned communities. Some are comprehensive, new town style developments. Others are smaller and simpler master-planned communities that may not provide a full complement of uses. Although “new towns” are more difficult to develop, they can have more social benefits.
- Many precedents of master-planned communities incorporate social or environmental goals, like minimal environmental impact.

#### **Benefits and Challenges of Infrastructure-rich Additions**

New housing built on vacant lots on the periphery of urban areas does not have access to infrastructure and services unless those are also built. In general, it is the responsibility of local government to provide these services, yet when growth happens too quickly, the public is unable to finance and build adequate infrastructure. The strategies listed in this section offer a number of ways in which governments can either slow the rate of development to a pace that matches their ability to provide infrastructure and services, raise money from new developments to finance the improvements, or encourage developers to contribute to their construction. Some developers in Mexico are providing such infrastructure either as a requirement by government or for marketing purposes.

## Benefits of Infrastructure-rich Additions

**Growth management:** One benefit of these strategies is that they complement the densification strategies listed in the previous chapter. By tying urban growth to infrastructure provision, governments are able to slow the rate of outward urban expansion and limit the areas in which greenfield development might occur. This makes it easier for governments to encourage infill development and redevelopment, especially if development processes are streamlined for infill development. While the strategies to require concurrency or ask for impact fees, etc., can be used to reinforce densification policies, this is not always the case. As will be discussed later, many of these policies have actually discouraged densification and infill development in communities that have adopted them. However, this is due more to the design of the specific policies than their inherent nature. For this reason, it is important to design and implement a comprehensive strategy where such complimentary policies may be designed and coordinated, instead of implementing disparate policies in a piecemeal fashion. While possible, it is much more difficult to coordinate strategies done this way.

**Coordinated infrastructure and services:** This is essential, since without proper services and infrastructure, housing may remain vacant, be abandoned, or remaining residents will suffer the effects of lack of services. While providing housing for residents is important, municipalities should be sure the growth of housing does not exceed their ability to provide it with proper infrastructure and services. It is also important for government to consider a wide range of infrastructure and services in their concurrency requirements. This is especially true for transportation infrastructure, where government can use concurrency as a powerful tool to ensure that housing is serviced by alternative modes of

transportation, such as buses or rapid transit.

## Challenges of Infrastructure-rich Additions

**Level of service (LOS):** Concurrency policies rest on the assumption that the adequacy of a service or infrastructure system can be quantitatively measured and assessed. However, it is not always easy to create appropriate indicators, nor is it easy to create agreement among all governments about what that indicator should be, or to go about the process of coordinating the proper analysis. This is especially true for LOS measures of road networks. Within the United States, states have adopted a number of different measures for concurrency, especially for transportation. Florida, for example, mandates that municipalities use a combination of average travel speeds, traffic density, and road flow rates to determine LOS for every road, regardless of its function (Chapin et al. 2007, 5). If the level of service is too low, housing cannot be built as it would overburden road systems.

The state of Washington, on the other hand, allows local governments to create their own LOS standards, and use a variety of measures such as travel delays, average speeds, and person carrying capacity. In addition, Washington allows municipalities to create different measures for different street types and functional classifications (Bucher, Willis, and Ratliff Corp. 2006, 6). Some amount of standardization in the requirements is important, especially if regional comparisons of impacts are to be made. However, some flexibility allows the overall policy aim to be achieved: developing in well-serviced areas.

**Regional/metropolitan impacts:** One challenge of LOS standards in concurrency policies is that they are generally calculated without taking into account the regional impacts of development. Residents in a new development in one municipality might use services like schools,

roads, or healthcare in other municipalities or jurisdictions within their region. However, LOS measurements generally only take into account the impacts new development will have within a given municipality. Failure to implement strong concurrency policies in some localities can negate the positive outcomes for communities that do use effective concurrency. A number of concurrency policies in the United States do not consider regional impacts although locations with stronger metropolitan, state, and national planning systems can overcome some of these issues.

One example can be seen in Montgomery County, Maryland. While this county has been very proactive about ensuring that new developments within its jurisdiction do not overburden its public infrastructure and services, surrounding counties in the Washington, D.C. metropolitan area do not have such requirements (Bucher, Willis and Ratliff Corp. 2006, 8-9). As with some of the densification strategies mentioned in the previous chapter, a policy like concurrency works best when done in collaboration with other local governments in a metropolitan area or region, potentially through a formal metropolitan planning agency. Because the effects of development are not confined to one municipality and poor planning in other localities can diminish the benefits of good planning elsewhere, these programs need to be able to work across political boundaries. This suggests the need for a regional planning body to, at the very least, monitor and measure the LOS changes new developments will create in neighboring jurisdictions.

**Discouraging infill development:** Contrary to the intent, programs like concurrency can actually discourage infill development. This is due to the dependence of these policies on level of service requirements, especially when they are applied evenly across a jurisdiction. Since higher density areas naturally tend to have higher levels of congestion, they also tend to have lower

LOS levels than more peripheral areas. This is especially true for roads, which have more unused capacity in peripheral areas than in higher-density urban areas (Chapin et al. 2007, 14). Since there is spare capacity in the periphery, developers are encouraged by concurrency to build there, as it means they will not have to pay for infrastructure and service capacity improvements or wait for local governments to provide it.

In their critique of the transportation requirements of Florida's concurrency program, Chapin et al. (2007) illustrate this challenge well with a hypothetical example. They describe an old warehouse district located near the center of a mid-sized city in Florida. The district has "narrow streets, wide sidewalks, mature trees, and architecturally distinct structures" (Chapin et al. 2007, 1). However, the current LOS for roads in the district is at level D and the new development is forecasted to put the roads at an LOS of F, below the level E threshold required under the concurrency law (in level of service calculations, A is good and F is bad or congested). So while this might seem an ideal site for redevelopment, the developers will need to either pay for expensive upgrades to add road capacity (and potentially destroy the qualities of the district that make it so attractive) or add other modes of transportation (regardless of whether an adequate public transportation network exists in the area) if they want to move forward with the project (Chapin et al. 2007, 1). This challenge highlights the importance of program design. While the Florida concurrency program had a stated goal of preventing suburban sprawl, the requirements set forth in the program actually encouraged it.

### Fostering Infrastructure-rich Additions: Conclusions

Ensuring new developments on the urban fringe have adequate services and infrastructure is beneficial to urban areas in a number of

ways, from complementing existing growth management and densification policies to forcing coordination among the many planning processes that governments engage in. However, these policies are not always easy to implement. Often, they have unintended consequences that actually incentivize unwanted development patterns. Monitoring results is key to achieving the potential benefits of the strategies discussed in this section.

To ensure better infrastructure, governments can require developers to contribute to infrastructure provision for new projects, through exactions or impact fees, or government entities themselves can take responsibility for building out the needed infrastructure and services. Infrastructure provision is far easier when development is adjacent to existing built-up areas, although coordinating services and development is a classic problem of new construction, as exemplified by difficulty in defining appropriate level of service (LOS) metrics. Concurrency requirements and densification strategies can help to promote orderly development and infrastructure provision. They must, however, be carefully crafted and monitored to ensure that they are generating the desired outcomes, not contributing to sprawl.

As stated earlier, Mexico's new urban containment boundaries (PCU) are a first step in ensuring that new development is more easily serviced. It is likely that other approaches to providing infrastructure and services, and ensuring better designed developments, will be needed to supplement this approach. While many of these are local concerns, the federal government can help promote such programs by providing model regulations, tying funding to improved local regulations, and providing resources for improved infrastructure and services planning, construction, and maintenance. Given the generally high costs of infrastructure planning and development at the local level, these policies and initiatives may point

to a greater role for larger state or federal agencies to assist with level of service analysis. They may also invest in the infrastructure needed to support new housing development and upgrade existing areas experiencing a lack of services.



The *San Marcos Desarrollo Certificado* in Mérida, Yucatán, includes a range of housing options and public space amenities provided by developers. *Desarrollos Certificados* has been a strategy devised by the Federal Government to address a lack of adequate infrastructure provision in housing developments.  
Photos: Nélida Escobedo



## 2.2 Sustainable Design for New Developments



### Sustainable Design for New Developments

#### What It Is

- Sustainable design for greenfield development offers alternatives to traditional urban sprawl by advocating compact design, ecological protections, or a combination of the two.
- Smart growth, new urbanism, transit-oriented development, conservation subdivisions, and green building and ecosystem services are all approaches that have been suggested as sustainable designs for greenfield developments.

Several new developments in Pachuca in the state of Hidalgo feature a number of green building technologies as well as planned open spaces.

*Photo: Collection of Ann Forsyth*

#### Sustainability Definition/Concepts

Sustainability is key to current housing and urban development policy in Mexico and has grown to become an important consideration in many aspects of life in the 21st century. While the term and related words (sustainable, sustainable development, green, eco-friendly, etc.) are widely used, there is very little consensus about what they mean or how the concept of sustainability should be defined, analyzed, and operationalized. Indeed, one of the few aspects of sustainability



The compact city approach focuses on saving energy by using attached housing and building around transit lines. Hammarby Sjöstad on a brownfield in Stockholm, Sweden, a showcase development, also features extensive green spaces.

*Photo: Collection of Ann Forsyth*

for which there is broad consensus is that the term itself is fuzzy, ambiguous, and broad (Neuman 2005, 17; Parris and Kates 2003, 13.2). In spite of this, sustainability and sustainable development have become central to the goals and objectives of many international organizations, nations, city and local governments, non-governmental organizations, and even corporations (Parris 2003, 13.2). With increasing extreme events and associated social vulnerability these issues are all the more important in the area of social housing. **For further discussion of definitions of sustainability and the evolution of sustainability as a concept, see Appendix C.**

There is no right approach to sustainable design, as it largely depends on how one chooses to define sustainability. However, design that incorporates sustainability will have to make tradeoffs between environmental, economic, and social goals. In general, planners and designers have approached sustainable design in one of two ways: compact development or ecological protection. However, cross-over and hybrids between the two approaches do (and should) exist.

**Compact development:** Compact development draws on a long planning tradition of walkable villages, towns, and neighborhoods, as well as the history of metropolitan plans based on intensifying development around rail station areas. Its recent incarnation, exemplified best by Smart Growth and the Congress for New Urbanism, advocates for keeping the footprints of development as small and compact as possible. This approach advocates many of the same ideas and design elements as those featured in the compact city model described in the previous chapter (Berke 2008, 400). Specific design elements include higher density buildings, mixed uses, multi-

modal transportation networks, gridded streets (or at least a high degree of connectivity), and the neighborhood as the central organizing feature of a community. It approaches sustainability through the lens of increasing the efficiency with which cities use energy, land, and natural resources (Crewe and Forsyth 2011, 270). Urban form is its main tool for achieving efficiency.

Not all such developments deal with social issues but the compact character and desire for diversity means that the best of them try to provide housing options for a range of incomes or to place lower income housing in prime areas with good public transport access (Jacobsen and Forsyth 2008). They deal with the risks of climate change through a compact footprint.

**Ecological protection:** Ecological protection, unlike compact development, is not concerned so much with urban form as it is with how urban expansion will affect ecological systems and functions (Berke 2008, 394). In fact, higher density, a cornerstone of compact development, tends to be discouraged by proponents of ecological protection, as it means there will be little space in a neighborhood or development dedicated to open space. In addition, large concentrations of people means that pollutants cannot be processed by natural systems.

One of the benefits of ecological protection is that it tries to bring nature and people as close together as possible, fostering connections to the natural world that can often be lost in urban areas (Crewe and Forsyth 2007, 284). There are many examples of eco-villages that explicitly incorporate principles of ecological protection, such as the Woodlands in Texas or Village Homes in California, illustrated in this report (Crewe



Village Homes in Davis, California, is an example of the lower density ecological protection approach. It features extensive on-site food production, solar energy, and bicycle paths. Rather than strictly protecting pristine nature it integrates people with natural systems.  
*Photo: Collection of Ann Forsyth*

and Forsyth 2007, 269). Socially, many of these developments stress community togetherness and cohesion, particularly the smaller eco-villages.

While there is disagreement between proponents of the compact development and ecological approaches on a theoretical level, actual development projects tend to incorporate aspects from both. It should also be noted that both of these approaches can be useful in addressing environmental and economic aspects of sustainability. If social equity is also to be included (as it should be) in definitions of sustainable development, additional programs and policies by government will need to supplement the mainly design-oriented approaches advocated by compact development and ecological protection. For example, to guarantee long-term affordability, it is generally not enough to merely provide a variety of housing types; rather, government-owned housing or well-crafted regulations protecting affordability are needed.

### The following sections describe sustainable design approaches in greater detail:

- Smart growth
- New urbanism
- Transit-oriented development
- Conservation subdivisions
- Green buildings and ecosystem services

#### 2.2.1 Smart Growth

**What it is:** The term “smart growth” has been adopted to represent planning and design principles advocating compact development. It emerged out of various growth management policies implemented by governments in the United States starting in the 1970s.

**How it works:** Smart growth itself is not a planning or design movement, but rather an overarching approach to urban growth under

which many movements, such as New Urbanism, may fall. In the United States, smart growth principles are represented by Smart Growth America ([smartgrowthamerica.org](http://smartgrowthamerica.org)), a coalition of advocacy groups and non-profits that promotes “building urban, suburban and rural communities with housing and transportation choices near jobs, shops and schools,” creating communities with “strong local businesses,” “schools and shops nearby and low-cost ways to get around,” etc. (Smart Growth America 2014). While these principles are broad and general, the U.S. Environmental Protection Agency (EPA) has created a list of ten principles it considers to embody smart growth:

- Mix land uses
- Take advantage of compact building design
- Create a range of housing opportunities and choices
- Create walkable neighborhoods
- Foster distinctive, attractive communities with a strong sense of place
- Preserve open space, farmland, natural beauty, and critical environmental areas
- Strengthen and direct development towards existing communities
- Provide a variety of transportation choices
- Make development decisions predictable, fair, and cost effective
- Encourage community and stakeholder collaboration in development decisions (EPA 2013).

**Example:** There are numerous examples of developments with many smart growth features. However, far fewer of these examples combine these features with social equity goals such as providing affordable housing. One such example is the Livable Neighborhoods Code, put into place by the Western Australian Planning

Commission (WAPC) in Perth. The guidelines were implemented to guide future sustainable development and reduce existing urban sprawl in the region through design criteria that considers smarter growth, such as the community context, available public parkland, or urban water management (Curtis and Punter 2004, 40). The guidelines offer alternative design criteria for traditional subdivisions on greenfield sites, enabling developers to create better connected developments with features such as interconnected roadways and intermodal designs (Curtis and Punter 2004, 53). **For further information, see the case study of Western Australian Livable Neighborhoods Code in Appendix D.**

#### **Smart growth: Implications for Mexico.**

Smart growth principles could serve as an important resource for Mexican municipalities to refer to when developing plans at the local level for encouraging compact development, a wider range of housing types and tenures, ensuring walkability and broadening transportation options, etc. Notably, the federal government's National Urban Development Plan 2014-2018 overlaps in many ways with the principles of smart growth, particularly in its emphasis on containing growth and propelling more compact and vertical development.

#### **Takeaways:**

- Smart growth is an umbrella term for a variety of strategies to intensify development while preserving open space and creating an inviting public realm.
- Smart growth frameworks are a useful resource from which local governments can improve their strategies for greenfield development and densification policies.

#### **2.2.2 New Urbanism**

**What it is:** The Congress for the New Urbanism (CNU) is an urban design and planning movement started in the United States in the early 1990s by a number of architects as a way to formalize and coordinate their work in creating "sustainable, walkable, mixed-use neighborhoods that provide for better health and economic outcomes" (CNU 2011). It is similar to other movements internationally including the UK Urban Villages movement (Biddulph 2000).

**How it works:** Many of the principles of new urbanism are similar to those of smart growth; however the principles of the CNU tend to focus more on urban design and architectural elements of neighborhoods. Their principles are listed in the Charter of the New Urbanism (CNU 2001) and focus on design at different scales. A relevant selection of the 27 principles includes those which go beyond pure urban design:

- Within neighborhoods, a broad range of housing types and price levels can bring people of diverse ages, races, and incomes into daily interaction, strengthening the personal and civic bonds essential to an authentic community.
- Neighborhoods should be compact, pedestrian friendly, and mixed-use.
- Communities should be designed for pedestrian and transit as well as the car.
- Cities and towns should be shaped by physically defined and universally accessible public spaces and community institutions.
- The economic health and harmonious evolution of neighborhoods, districts, and corridors can be improved through graphic urban design codes that serve as predictable guides for change.
- A primary task of all urban architecture and landscape design is the definition of streets and public spaces as places of shared use.



New Urbanist (top three photos) and Urban Village (bottom three photos) developments at Daybreak in Utah and Poundbury in the UK.

*Photo: Collection of Ann Forsyth*

- Urban places should be framed by architecture and landscape design that celebrate local history, climate, ecology, and building practice.
- The metropolis is made of multiple centers that are cities, towns, and villages, each with its own identifiable center and edges.
- Where appropriate, new development contiguous to urban boundaries should be organized as neighborhoods and districts, and be integrated with the existing urban pattern. Noncontiguous development should be organized as towns and villages with their own urban edges, and planned for a jobs/housing balance, not as bedroom suburbs.

In addition to these principles, the CNU advocates for the use of form-based zoning codes instead of traditional zoning codes as a way to achieve many of the architectural and “placemaking” principles laid out in their charter. Unlike traditional zoning, which emphasizes control of land use, form-based zoning emphasizes the physical forms and buildings in different locations. Form-based zoning often uses design guidelines and architectural standards that aim to create, emulate, or protect a certain architectural or urban design characteristics found in a region.

**Example:** There are many examples of new urbanist developments, although it is very difficult to conform to all the movement’s goals. Kentlands in Maryland is one of the better known examples in the U.S. and is privately developed. In the U.K., Poundbury in Dorchester mixes social and for-sale housing with nostalgic architecture in a development sponsored by the Prince of Wales. Hope VI developments in the U.S., that redeveloped public housing for mixed-income groups, typically used new urbanist design principles.

### New urbanism: Implications for Mexico.

Similar to the principles of smart growth, some New Urbanism principles could be well-applied to the Mexican context. New Urbanism’s emphasis on effective urban design, accessibility, and integration into the urban fabric are all standards that could be more strictly applied to new housing developments (through clearer standards for developers) to ensure higher quality housing and urban development overall. This could be particularly beneficial for designing social housing developments, such as those sponsored by INFONAVIT, that are often criticized for their use of materials and design that is removed from typical Mexican building styles.

### Takeaways:

- New urbanism was developed to emulate the urban forms found in 19th century United States and traditional urban forms in Europe.
- Given this specificity of this form, the applicability to other countries and cities should be carefully considered.
- Form-based codes are one innovative approach to development regulation that new urbanists have advocated but that do not necessarily need to be “new urbanist” in design. The overall aim is to regulate the type and design of building rather than the uses.

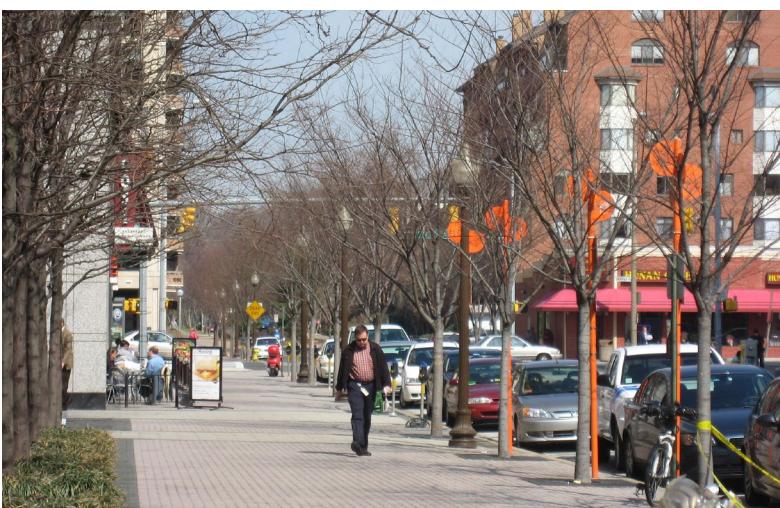
### 2.2.3 Transit-Oriented Development

**What it is:** Transit-oriented development (or TOD) is a strategy that advocates building dense, mixed-use developments within walking and sometimes cycling distance of transit stations.

**How it works:** Due to its utility in promoting compact, mixed-use development, TOD is often included in smart growth and new urbanism, although it has a long history dating to the

nineteenth century. The rationale behind the strategy is that creating housing, jobs, and services close to transit stations will increase transit use, as people who live near the station will be more inclined to use transit more frequently. In addition, people who live elsewhere in the city or region will be able to access the jobs and services at the TOD site using public transit. This strategy can be used around existing transit stations, through redevelopment or infill, or as a plan for expanding transit systems.

**Example:** The Washington Metropolitan Area Transit Authority (WMATA), the owner and operator of public transit services in the Washington, D.C. metropolitan area (Washington, D.C., Virginia, and Maryland), played a major role in encouraging transit-oriented development surrounding the stations of the Washington Metro system



Housing development in Arlington Virginia, takes advantage of closely spaced railway stations for access.  
*Photo: Collection of Ann Forsyth*

(Metro) (Cervero et al. 2004, 229). WMATA created policies and procedures to form public-private partnerships with developers long before the Metro system opened in the mid-1970s, even creating an internal real estate development department (Cervero et al. 2004, 230). Arlington County in Virginia is known for being one of the most successful examples of TOD in the United States, with numerous large residential and commercial developments serviced by two Metro lines. As of 2004, 26% of the county's residents lived near Metro stations. Of these residents, 39.3% used public transit, the highest rate in the metropolitan area (Cervero et al. 2004, 235). In addition, between 1960 and 2002, 45,998,870 square feet of office space and 4,231,453 square feet of retail were built near Metro stations in Arlington, as well as 35,019 residential units and 14,858 hotel rooms (Cervero et al. 2004, 240; Jacobsen and Forsyth 2008).

### TOD: Implications for Mexico.

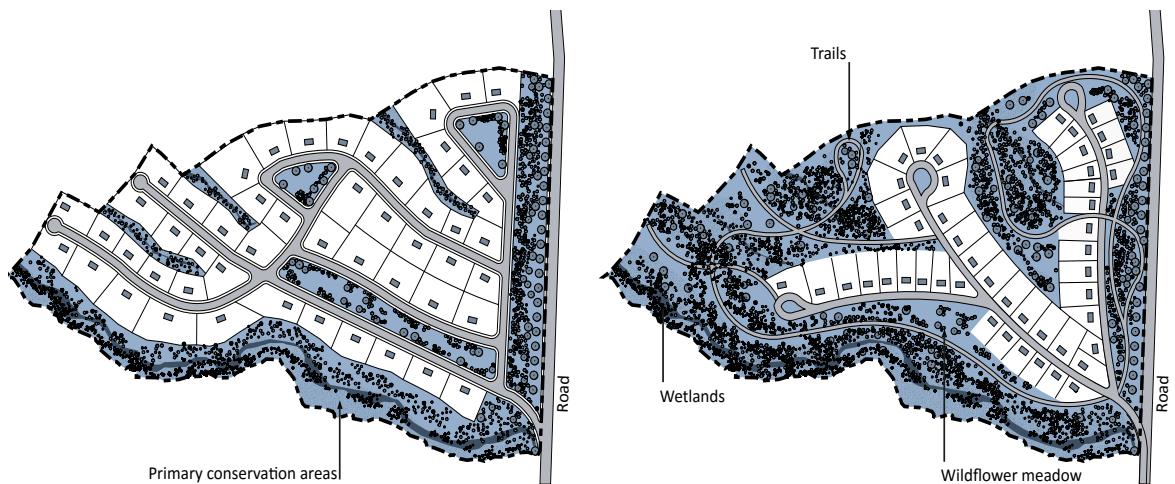
In spite of Mexico's wide variety of transit options, and many important Latin American examples in cities such as Bogota and Curitiba, new development continues to be largely low density and auto-oriented. Transit-oriented development can create a structure of multiple centers (for a train-based system) or high intensity corridors (for a bus-based system). While beneficial, the lack of strong metropolitan planning makes this difficult to implement.

#### Takeaways:

- TOD can help support transit services, reduce dependence on private automobiles, and provide greater accessibility to jobs, services, and housing options.
- Planning efforts must be better aligned with transportation plans in order to designate housing investment in strategic areas, a task that could logically be led by municipal or metropolitan planning authorities. Transit agencies can also play an instrumental role in helping to coordinate transit oriented development.

### 2.2.4 Conservation Subdivisions

**What it is:** A conservation subdivision is an alternative to the traditional low-density, American-style subdivision. Instead of exacerbating sprawl, a conservation subdivision preserves open space and other ecologically valuable or sensitive lands by clustering development on a small portion of the land that is to be developed.



**How it works:** The development of a conservation subdivision begins with a detailed examination of the land, in which hydrologic, ecologic, and other environmental features of the site to be conserved are identified. The environmentally sensitive areas are set aside for conservation (Arendt 1996, cited in Allen et al. 2012, 244). Developers then cluster roads, lots, and housing across the remaining land. While specific regulations vary by jurisdiction, most conservation subdivision ordinances are density-neutral, meaning that they allow the developer to build the number of units that zoning allows based on the area of the entire parcel, not just the area that is allowed for development (Allen et al. 2012, 244). Therefore, lots tend to be smaller and housing closer together, but this tradeoff is often seen as acceptable, as residents have easy access to the conservation lands, which also serve as green or open space. For this process to be successful, governments need to provide supportive regulations.

Conservation subdivisions cluster development on parts of a parcel in order to protect natural systems, agriculture, and cultural landscapes.

*Diagram by Jorge Silva*

### Conservation subdivisions: Implications for Mexico.

Though not as applicable to urban areas, conservation subdivisions are primarily useful in smaller towns and rural areas where there are valuable agricultural areas, historical landscapes, or ecological reserves to protect, a reality confronted in metropolitan areas across Mexico. Rather than unilaterally restricting development in sensitive or vulnerable areas, conservation subdivisions represent a critical compromise that enable responsible and sustainable development, and is consistent with the federal government's increasing support for more compact development.

### Takeaways:

- Conservation subdivisions can preserve ecologically and culturally valuable land while allowing for increased development and a variety of housing in designated areas.
- On the other hand, their typically low densities may mean that residents will face long travel times.

### 2.2.5 Green Buildings and Low-impact Design

**What it is:** Green design and low-impact design are a cluster of approaches that attempt to minimize the impact human development has on the environment (Berke 2008, 394). By protecting ecosystems, green design and low-impact designs can take advantage of the functions the natural system provides (Berke 2008, 394). In addition, these approaches seek to increase the resource and energy efficiencies of buildings (Crewe and Forsyth 2011, 283).

**How it works:** There are numerous green design elements and low-impact designs, including:

- Natural drainage systems that allow runoff and storm water to infiltrate into the ground
- Water systems that allow buildings to recycle and reuse potable water as “gray water”
- Rainwater harvesting
- Septic systems and effluent treatment systems that allow for gray water harvesting and reuse
- Solar water heaters (Swilling and Annecke 2006, 323)
- Alternative energy generators, such as solar panels, wind turbines, biogas, etc.
- Use of LEDs and other low energy lighting
- Composting of household waste
- District heating systems (Crewe and Forsyth 2011, 280-283; Swilling and Annecke 2006, 322-324)

**Example:** The Lynedoch EcoVillage near Cape Town in South Africa is an excellent example of a development that has incorporated many of these green building and ecosystem services strategies, in addition to focusing on economic and social aspects of sustainability. The development, which was led by a non-profit board set up in 2000, had three stated goals: to be a socially mixed community (in terms of race



Green building and low-impact design solutions come in a variety of forms featuring such technologies such as solar energy generation, passive solar design, water infiltration, and water recycling.

*Photos: Collection of Ann Forsyth*

and class), to be an ecologically designed urban system, and to be financially and economically viable (Swilling and Annecke 2006, 316). The development, which initially was funded through donations and government loans, offered 42 plots of land that were affordable to both middle- and low-income buyers. It incorporated a number of the green building and ecosystem services mentioned previously, and placed a school serving the community's children as the central focus of the development (Swilling and Annecke 2006, 317).

### **Green buildings: Implications for Mexico.**

Green building strategies have been increasingly implemented through INFONAVIT's "Eco-Technologies" and "Green Mortgage" programs, enabling homeowners to gain access to energy and cost saving household appliances such as solar water heaters or water conserving faucets. Particularly given the scale of social housing development in Mexico, these small-scale strategies can help make new developments significantly more environmentally friendly. However, given the impact of large-scale developments and the realities of water scarcity in Mexico, green building strategies must be applied beyond the level of the household to ensure that a development's infrastructure systems (such as energy grids, septic systems, drainage systems, etc.) are sustainable.

#### **Takeaways:**

- Green building and green infrastructure approaches can be combined with strategies that explicitly incorporate social and economic goals in order to produce a more fully "sustainable" project.
- While household-scale green building strategies can have important cost savings for families, green infrastructure deserves particular attention to assure that water and sewage is properly and sustainably managed.

## **Benefits and Challenges of Sustainable Design for New Developments**

### **Benefits of Sustainable Design for New Developments**

**Cost savings:** As with densification strategies, many of the approaches to sustainable greenfield development allow governments to save money when it comes to spending on services, new infrastructure, and maintenance. Using a cost and demand model of public spending in 2,500 Spanish municipalities in 2003, Hortas-Rico and Solé-Ollé (2010) examined the impact of urban sprawl on municipal budgets while controlling for other factors. In this study, sprawl was defined using population density, residential houses per capita, percentage of scattered population per capita, and population centers per capita (Hortas-Rico and Solé-Ollé 2010, 1522). The researchers found that local governments spent more for local police, community facilities, culture and sports, general administration, and grants in lower density developments than they did in higher density ones. (Hortas-Rico and Solé-Ollé 2010, 1536).

New development of any type usually will require government to spend money on new infrastructure and services, or to upgrade existing infrastructure and services. However, evidence suggests that compact, higher density development requires governments to spend less money per capita than low-density sprawl does.

**Also see Part 1: Densifying Existing Areas.**

**Supports public transit:** Increasing public transit ridership can provide lower cost transportation options for low-income people and those too young or too old to drive. Promoting transit ridership is a benefit commonly mentioned by proponents of smart growth, new urbanism, and transit-oriented development. They argue that by increasing building density and creating

more walkable, pedestrian-friendly environments surrounding transit stations, transit ridership will increase, as it is easier to use transit. While there is mixed support for this assertion, these design approaches do create built environments that make it more financially feasible for government to extend transit service, and for people to access transit than in traditional low-density suburbs (Handy 2005, 161).

Also, researchers must deal with self-selection biases in studies of transit usage and the built environment. This issue contends that people who prefer to use public transit tend to live in neighborhoods where they can do so, making it difficult to assess the degree to which the built environment changes behavior, rather than enabling a specific behavior over another (e.g. using transit over automobiles) (Handy 2005, 162). In a literature review of studies regarding the relationship between transit and smart growth/new urbanism, Handy concludes that the reviewed studies suggest only that the urban designs advocated by these movements “make it easier for those who want to drive less to do so” (Handy 2005, 163). While smart growth, new urbanism, and TOD might not directly change people’s behaviors or tendencies, they do allow those who want to use transit to do so. This is significant since traditional low-density greenfield developments usually do not support this option. Policies such as expensive parking fees or congestion charges, which can discourage driving, will only encourage public transit usage when transit use is a viable option for citizens.

**Conservation and preservation:** Even though all of the sustainable design movements and strategies discussed in this section represent new development on land where none existed before, each one considers land preservation and promotes resource and land conservation. One approach, compact development, preserves land by concentrating development through higher

densities. However, it has no formal mechanism for preserving land, relying instead on other government policies and programs or non-profit organizations. In conservation subdivisions, land preservation is an essential part of the subdivision design, and the land, in most cases, is placed under a conservation easement or some other formal legal protection.

Studies focused on specific states or regions (Healy and Rosenberg, 1979; Ketcham and Seigal, 1991; Moore and Nelson, 1994; Nelson, 1999; Shen and Zhang 2007) have found that in these contexts, growth management policies were successful in stopping or slowing urban sprawl. However, many of these studies were anecdotal or lacked conclusive evidence (Anthony 2004, 383). A study of state-level growth management policies (which includes smart growth) in the United States, compared changes in urban land and population densities between 1982 and 1997. Using multiple regression models, Anthony (2004) found that while growth management regulations did seem to have some effect on reducing urban sprawl, the effect was not statistically significant. In this study, states with growth management policies, on average, did not manage to increase urban densities. They were, however, more successful in slowing reductions in population density than states with no statewide growth policies (Anthony 2004, 385, 390).

Growth management, smart growth, and other anti-sprawl measures vary across jurisdictions. Accounts of individual measures in cities or metropolitan areas would suggest, however, that these policies can be effective at preserving land and reducing urban sprawl.

### Challenges of Sustainable Design for New Developments

**Negative impact on social equity:** Sustainable development should be analyzed on its

performance in three areas: economic development, environmental protection, and social equity or development. All of the sustainable development strategies discussed in this section touch upon the economic and environmental aspects of sustainability, but the social dimension, while discussed in theory, is often neglected in practice. Because of the costs associated with sustainable design, it can be challenging to create developments that are truly inclusive of lower-income households, or effectively applied to lower-income housing developments.

New urbanism and smart growth both advocate for socially inclusive and diverse communities of residents from different racial, ethnic, social and economic backgrounds. Proponents, especially of new urbanism, believe that these goals can be achieved through design and without government intervention (Talen 2010, 491), mainly by offering a mix of housing types at higher densities. However, in practice this approach has not been successful. Talen (2010) attributes this to the tendency of new urbanist developments to provide “walkable, well designed, and amenity-rich (i.e. well serviced by stores, transit, and schools)” neighborhoods (Talen 2010, 493). These features and amenities create a high demand to live in such neighborhoods, which in turn causes housing prices to rise (Talen 2010, 493). The issue is that a design approach alone cannot make housing affordable.

This lack of affordability is a concern, as it means that the social mixing and diversity advocated by planners and policymakers (as well as proponents of smart growth and new urbanism) will not be possible using design and free market forces on their own. Government is needed to provide programs, requirements, and incentives to developers to continue to build and provide housing that is affordable and desirable to a wide range of social classes in order to prevent or

reverse patterns of spatial segregation that have occurred in many metropolitan areas around the world. There are substantial examples of these approaches used by non-profit and government housing developers that are affordable.

**Regulatory barriers:** There is little mystery as to why traditional forms of low-density development and urban sprawl have occurred in cities: zoning codes and development regulations that guide development usually make such patterns of development the only legal options. Even when alternative development designs are allowed, such as conservation subdivisions or new urbanist neighborhoods, they are often subjected to additional regulatory requirements that create disincentives for developers to attempt them, as they may be more complicated or more costly than traditional developments.

In an analysis of zoning and subdivision ordinance and interviews with developers in Waukesha County, Wisconsin (U.S.), Göçmen found that in 15 of the 19 jurisdictions reviewed, the permitting process for conservation subdivisions required additional steps and fees, resulting in time and money costs (Göçmen 2013, 126). In interviews with developers conducted by the researcher, almost all said land use regulations prevented them from attempting to build conservation subdivisions in the county (Göçmen 2013, 129). Another study of conservation subdivisions, from North Carolina, also in the United States, found through interviews with developers, planners, designers, real estate agents, and local politicians, that the third highest ranked barrier to conservation subdivisions in the state was a “lack of interest from elected officials to change zoning regulations” (Allen et al. 2012, 246).

Mixed use, another key component of smart growth and new urbanism, is likewise discouraged or prevented by zoning and regulations. Traditional zoning systems that separate

different types of land uses are still used in many jurisdictions. Altering the outcomes of greenfield development requires changing the rules and regulations that govern it. If these new forms of development are to be accepted and adopted by the development community, approvals for sustainable patterns of development must be as easy, or easier, to achieve than traditional ones. At the very least, codes should give developers flexibility to be innovative and creative in the designs of their projects.

**Need for regional efforts:** Many of the benefits and advantages to smart growth, new urbanism, conservation subdivisions, and other types of sustainable urban designs are hard to prove definitively. This is mostly due to the fact that these benefits can only be achieved if these approaches are adopted regionally. Until entire regions have been transformed to match the visions of each of these approaches, we may never truly know their true benefits (and costs). The transportation benefits are particularly difficult to gauge. Specific developments might make it easier for residents to take public transit by creating walkable and pedestrian friendly environments surrounding transit stations. However, where driving is inexpensive and transit networks are weak, residents will likely continue to drive.

Whether greenfield development is sustainable depends not just on the design of the development, but on how the rest of the city, metropolitan area, or region functions. New development must be complemented by efforts that reform and retrofit existing developments, suburbs, and neighborhoods. The region must be viewed as a whole, not as individual subdivisions, neighborhoods, or cities if its true potential to be sustainable is to be reached.

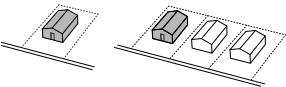
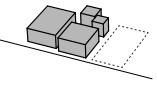
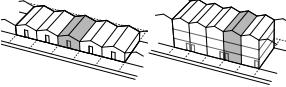
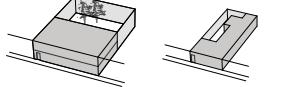
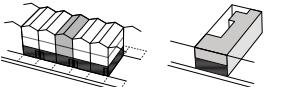
## Sustainable Design for New Developments: Conclusions

The benefits of more sustainable approaches to greenfield design are many, as the strategies seek to simultaneously protect the environment while also promoting economic development, social integration, and diversity. However, these benefits are not well understood and can be difficult to quantify.

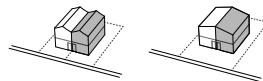
While greenfield development extends urban areas outward, it can be done in a way that coordinates development, services, and infrastructure and uses more innovative and sustainable urban designs. This requires more planning capacity at all levels of government, as well as regional coordination, particularly for transit planning. Regulatory reforms and requirements or incentives for developers to take more comprehensive approaches are also needed to facilitate environmentally friendly design. It is important to explicitly consider measures to promote social equality, as these can become lost when focusing intensively on sustainable features.

While infill is an appealing approach to consolidating urban areas in Mexico, well-designed new development adjacent to existing areas can perform an important function in supplying housing. Given the diversity of circumstances in metropolitan areas in Mexico, multiple strategies will be needed to fit local needs and practices. **Table 2.2** lists the variety of housing types present in Mexican residential developments. This analysis examines the relationship between form, density and location of each type.

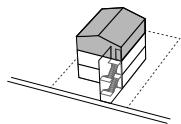
**Table 2.2 Housing types**

One-Family Housing (individual access to the unit)			
Detached			
<b>GARDEN HOUSE</b>	<p>1 unit/building Floors: 1-3 Floors Bedrooms: 1-6 bedrooms/unit Area: 557.42m<sup>2</sup> land area/family* Location: CONAVI perimeter: U2, U3, outside U3; Urban core, periphery, rural</p> 		
<b>FRAGMENTED</b>	<p>3-5 building/unit 1 Floor, 1 shared-bedroom/unit Area: 557.42m<sup>2</sup> land area/family Location: CONAVI perimeter: outside U3 Rural</p> 		
Attached			
<b>ROWHOUSE</b>	<p>4-20 units/building 1-3 Floors, 2-4 bedrooms/unit Area: 222.97m<sup>2</sup> land area/family Location: CONAVI perimeter: U3, outside U3; Periphery</p> 		
<b>DOWNTOWN</b>	<p>4-10 units/building 1-2 Floors , 3-5 bedrooms/unit Area: 371.61m<sup>2</sup> land area/family Location: CONAVI perimeter: U1, U2; Historic Urban Core, Urban Core</p> 		
Mixed-Use			
	<p>4-20 units/building 1-3 Floors, 2-5 bedrooms/unit Area: 222.97- 371.61m<sup>2</sup> land area/family Location: CONAVI perimeter: U1, U2, U3, outside U3; Historic Urban Core, Urban Core Additional uses: Retail, Parking</p> 		

### Two-Family and Three-Family Housing (Individual access to each unit)

**DUPLEX**

2 units/building  
1-2 floors, 2-4 bedrooms/unit  
Area: 222.97m<sup>2</sup> land area/family  
Location: CONAVI perimeter: U2, U3, outside U3; Urban core, periphery

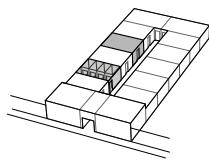
**TRIPLEX**

3 units/building  
1-2 floors, 2-3 bedrooms/unit  
Area: 136.10-222.97m<sup>2</sup> land area/family  
Location: CONAVI perimeter: U2, U3, outside U3; Urban core, periphery



### Multi-Family Housing (Shared access to units)

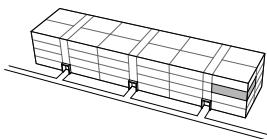
#### Shared-Sanitary Facilities

**VECINDAD**

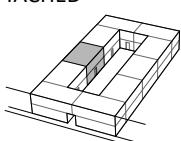
10-25 units/building  
1-2 Floors, 1 bedroom/unit (flexible use), bathrooms and laundry shared by occupants  
Area: 136.10-91.51m<sup>2</sup> land area/family  
Location: CONAVI perimeter: U1, U2; Historic Urban Core



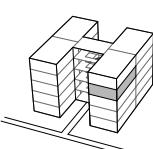
#### Low-Rise

**DETACHED**

6-40 units/building  
3-5 floors, 1-3 bedroom/unit  
Area: 136.10-72.24m<sup>2</sup> land area/family  
Location: CONAVI perimeter: U1, U2, U3, outside U3; Urban Core, periphery, rural

**ATTACHED**

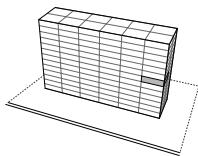
6-40 units/building  
3-5 floors, 1-3 bedroom/unit  
Area: 136.10-72.24m<sup>2</sup> land area/family  
Location: CONAVI perimeter: U1, U2, U3, outside U3; Urban Core

**MIXED-USE**

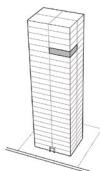
6-40 units/building  
3-5 floors, 1-3 bedroom/unit  
Area: 136.10-72.24m<sup>2</sup> land area/family  
Location: CONAVI perimeter: U1, U2, U3, outside U3; Historic Urban Core, Urban Core  
Additional Uses: Office Space, Retail, Recreational Amenities, Services



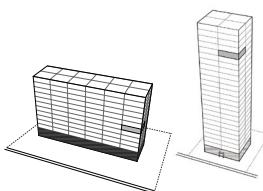
### Mid-Rise & High-Rise

**MID-RISE**

10-60 units/building  
5-15 floors, 1-3 bedroom/unit  
Area: 72.24-36.81 m<sup>2</sup> land area/family  
Location: CONAVI perimeter: U1, U2, U3, outside U3; Urban Core, Periphery

**HIGH-RISE**

Over 60 units/building  
15 or more floors, 1-3 bedroom/unit  
Area: 41.81 m<sup>2</sup> land area/family or less  
Location: CONAVI perimeter: U1, U2, U3, outside U3

**MIXED-USE**

10 TO over 60 units/building  
15 or more floors, 1-3 bedroom/unit  
Area: 41.81 m<sup>2</sup> land area/family or less  
Location: CONAVI perimeter: U1, U2, U3, outside U3  
Additional Uses: Parking, Office Space, Retail, Recreational Amenities, Services



\* Sources for areas for buildings below 13 floors, De Chiara et al. 1995, 20-21; drawing on other similar typologies e.g. Metropolitan Design Center n.d.

Photos: (left to right, top to bottom): Nélida Escobedo; Nélida Escobedo; Dennis Jarvis 2010; El Federalista; Ann Forsyth; Ann Forsyth; Nélida Escobedo; Ann Forsyth; Ann Forsyth; Ann Forsyth; Grupo Sadasi 2013b; Grupo Sadasi 2013a; Grupo Sadasi 2013c; Nélida Escobedo ; Ismael villafranco 2011; Henryfifar 2014; Nélida Escobedo; Nélida Escobedo; Ann Forsyth; Ann Forsyth; Antoine Hubert 2006; Ann Forsyth; Ann Forsyth; Ann Forsyth; Déní Fotografía 2009; Abbaner 2010; Erwin Morales 2009; Raul Pacheco-Vega 2014; Sources: De Chiara, J. et. L 1995, 21; Kliment, S.A., et al. 2010, 39-119; Metropolitan Design Center 2005; Sánchez Corral, J. 2012; Secretaría de Desarrollo Urbano y Vivienda 2015; Torres Zarate, G. 2003.





*Photo: Collection of Ann Forsyth*



# Part 3

## Retrofitting Places



## Part 3: Retrofitting Places

In the past decades, encouraged by regulations and lending regimes, many developments in Mexico have been built on the urban periphery in large single-use areas—whether housing, shopping, offices, or industrial areas. Motorized transportation is typically needed to get around. Depending on the location this might be automobiles, motorbikes, vans, buses, or even electric bicycles, and large areas may be set aside for roads and parking.

These outer areas of course have some substantial advantages that are very attractive. Residents are likely to have more access to private spaces both indoors and out, in part because such developments are in the outer parts of metropolitan areas where land is typically less expensive. This means people can afford more space. Some are also major employment centers. Others have provided affordable housing with reasonable transportation links.

Both those that are fairly successful at present and those that are still struggling have the potential to be redeveloped over time into more comprehensive communities. Such retrofitting is the subject of this chapter that looks at upgrading services, creating town centers, fostering links between housing and jobs, and dealing with housing that has been abandoned. While many of the principles in this chapter can be applied to historical cities as well, there is a very substantial need to improve areas built after the middle of the twentieth century and particularly those built in the early twenty-first century.



## 3.1 Financing Upgrades to Services and Infrastructure



### Financing Upgrades to Services and Infrastructure

#### What It Is

- A key issue in upgrading services and infrastructure (e.g. roads, sewers, schools, community resources) is how to fund the work.
- A number of mechanisms are available for municipalities interested in recouping costs of infrastructure investments; however, many require special legislation.
- Latin America has some internationally recognized models for such financing approaches.

Upgrades to Colonia Primero de Mayo includes a community center, drainage improvements, new open spaces, playgrounds, and pedestrian paths.

*Photo: Collection of Ann Forsyth*

Spare capacity in infrastructure and services, which may be available in older areas where household sizes have been shrinking, is lacking in many suburbs. This might be because proper physical and social infrastructure was never built in the first place since development was informal or was done professionally but at a minimum cost. Alternatively, infrastructure may have been developed at a level

matching the low-density character of many suburban environments, making it insufficient to handle more intense uses. Either way, upgrading the services and the infrastructure in suburbs is a necessary first step before retrofit projects seeking to increase densities, accessibility, housing diversity, etc. can be successful.

Depending on the strength of the real estate market, the private sector can be encouraged to make many of these upgrades with the help of proper incentives. However, in many cases, the public sector will need to be involved, either in partnership with private developers, or to spur private development. In order to do so, governments have used a variety of new financing mechanisms that have allowed even cash-strapped governments to finance upgrades.

### This section looks at several financing strategies:

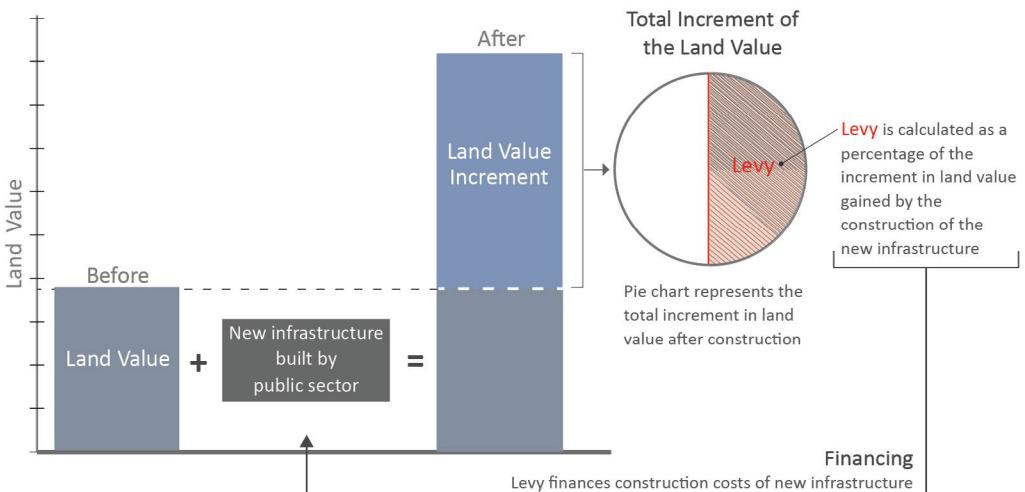
- **Value capture**
- **Tax increment financing**
- **Betterment contributions**
- **Land leasing**
- **National, state, or regional grants**

#### 3.1.1 Value Capture

**What it is:** Value capture is a strategy available to governments to recover some or all of the additional value they add to land in their jurisdiction through public spending, such as investing in infrastructure and services, or making changes to zoning and land use regulations (Smolka 2013, 2).

Value capture enables governments to retain some of the benefits of its investments in infrastructure and share it with the entire public, not just specific landowners.

*Diagram by Irene Figueroa Ortiz*



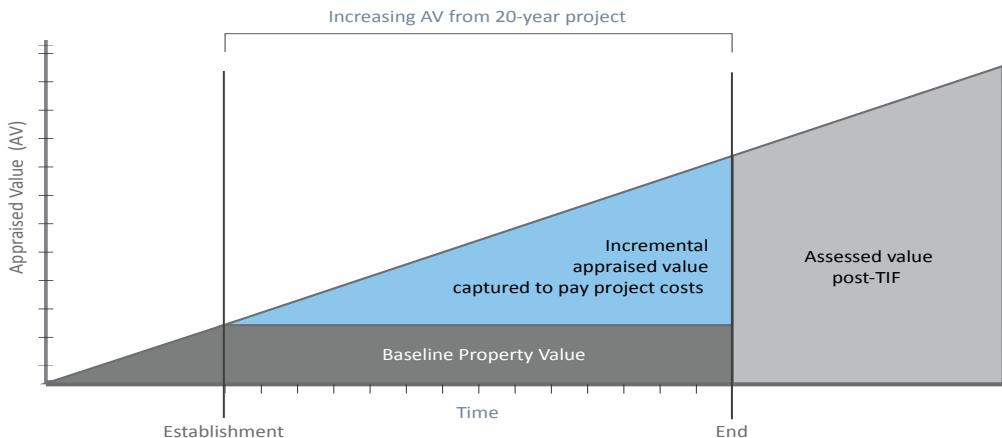
**How it works:** In general, land that is planned for redevelopment, or proximate to new investments in infrastructure and services, increases in value due to the new development possibilities. This added value or windfall gain accrues to adjacent landowners, without them making any investments or improvements. Value capture policies work under the assumption that this additional value provided by the government should be shared among the entire public, not just specific landowners (Smolka 2013, 8). The revenue collected from value capture can in turn be used to finance other public improvements, or to repay loans and bonds used to finance the spending that created the added value. There are many ways in which this added value can be collected by governments. The most common is through a tax or levy on the value increment, usually a percentage of the total increment. In addition, jurisdictions must determine what is to be the area of influence on which to capture the land value increment.

**Example:** Colombia's Law 388 of 1997 is perhaps one of the most comprehensive and well-known value capture systems in Latin America, starting as early as 1921 (Smolka 2013, 14; Ochoa 2013, 1). Most commonly, value capture has been used to finance roadway projects, and more recently, public transit projects (Ochoa 2013, 1). Within the country, cities have approached value capture in different ways, specifically in Bogota and Medellin.

In Bogota all benefits to residents are measured in the accounting of value capture, not just the effect on land values in the tax system. Since road construction is the most common use of value capture, improvements to mobility and circulation are also included. Medellin, on the other hand, only includes value increments in land value in its calculations (Ochoa 2013, 6). In general, the contribution levied against landowners in most Colombian cities is a factor of the cost of the construction project, the value generated in the surrounding land, and the ability of the beneficiaries to pay (Ochoa 2013, 1).

### **Value capture: Implications for Mexico.**

Value capture represents a critical strategy for Mexican governments to fund much-needed infrastructure. Value capture could potentially incentivize municipalities to invest in infrastructure, as they have a greater assurance of a public benefit and the ability to recuperate some of the investment. However, it bears noting that the value capture strategy relies on a robust system of accurate cadasters and consistent property taxation that, as noted previously, is generally lacking in Mexico. Laws regarding "*impuestos sobre plusvalía*" are one example of how similar strategies have been applied in Mexico in the past.



### Takeaways:

- Value capture is an appealing strategy for local governments, as it helps ensure that public sector investments receive some return.
- However, value capture can be unpopular with landowners, as they may feel that they are being unfairly charged before improvements have been made or benefits realized.
- In creating and implementing value capture mechanisms, consideration needs to be given to which increases in value are being captured (land value, property value, or some other kind of value), and which beneficiaries have to pay.

Tax increment financing pays for infrastructure and other investments by allocating the increase in property values for a certain number of years to repay back any loan. At the end of the period, property taxes go back into general revenue collection at a rate reflecting the increased value of development.  
*Diagram by Irene Figueroa Ortiz*

### 3.1.2 Tax Increment Financing

**What it is:** Tax increment financing (TIF) is a strategy for addressing the need for upfront improvements in services and infrastructure that are repaid with future tax revenue. Unlike value capture, TIF is not a new tax, but a reallocation of future tax revenue, usually from the municipality's general fund, towards repayment of loans or municipal bonds.

**How it works:** The first step is for a municipality to create a special district or area in which to deploy the TIF. Within this zone, property valuations are recorded and held constant for a specified period. The municipality makes public investments or improvements in order to encourage private development, financed through a bond issue or a loan for a set number of years. As new development occurs, it is assumed that the value of the property, and thus the tax levied on it, will rise. The difference between the pre-TIF tax value and the new tax value is then used to repay bondholders or creditors (Weber 2003, 55 in White et al. 2003).

## Tax increment financing: Implications for Mexico.

Much like value capture strategies, tax increment financing is heavily reliant on a formal property taxation system, and may therefore be challenging to implement in the short term in Mexico. The strategy is most useful where substantial increases in land value are expected. Although TIF strategies have not yet been implemented in Mexico, *fideicomisos* (trusts) represent one framework through which designated investment zones might receive upfront financing for infrastructure investments, to be paid back eventually as property values rise in that area.

### Takeaways:

- TIFs are a powerful tool for funding investments that are concentrated in a specific area.
- TIFs rely heavily on an existing and reliable property taxation and cadaster system, so that property values can be properly assessed. This may prove to be a significant challenge for local governments that do not have a cadaster system in place.

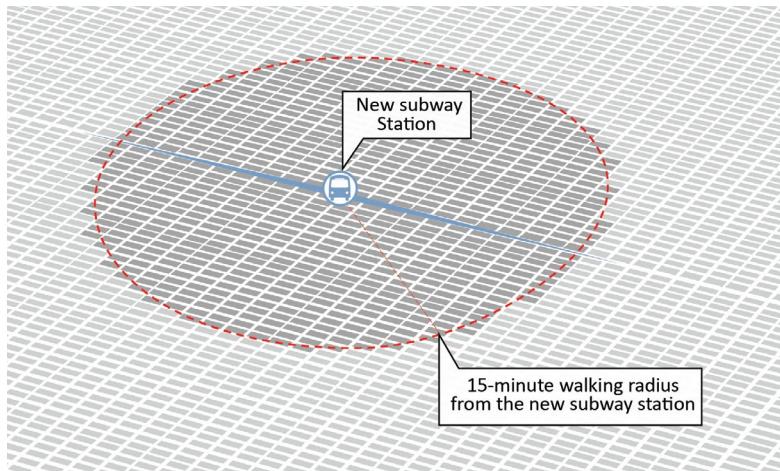
### 3.1.3 Betterment Contributions

**What it is:** A betterment contribution, similar to value capture, is a fee charged to landowners of properties that benefit from a public improvement or investment (Smolka 2013, 23).

**How it works:** Unlike value capture, betterment contributions seek compensation from landowners with property near a new public investment or public infrastructure regardless of whether the investment resulted in an increase in land values. While relatively simple in theory, betterment contributions are much more complex in practice. For starters, governments must first identify the area of influence or the area of impact on which to levy the contribution fee (Smolka

2013, 28). Next, the degree to which each property benefits from the public improvement must be determined. Adjustments can be made depending on the improvement or different criteria, such as the degree of accessibility the property enjoys in relation to the improvement. Last, most betterment contribution schemes have a schedule for payments of the contribution (Smolka 2013, 29-30). If a property is sold, the requirement to pay the contribution passes to the next owner.

**Example:** The city of Cuenca in Ecuador has used betterment contributions extensively as a tool to finance public improvement projects under its neighborhood improvement program. First, neighbors make a formal application to the municipal government asking for their neighborhood to be included in the program, which helps to finance improvements such as street paving, installation of basic services, or street lighting. The municipal government then analyzes the state of public services in the neighborhood and determines the number and types of improvements that are needed in the neighborhood. As a result of this process, the municipality creates a matrix of projects prioritized based on their importance in relation to a number of criteria. With the help of a neighborhood representative, the government uses this matrix to hire contractors to complete the improvements, with the costs of the work divided among the beneficiaries. Residents have up to 7 years to repay the costs of the improvements, with discounts available to those who repay more quickly (Aulestia and Rodríguez 2013, 12-13). Since 2003, Cuenca has issued 1,800 contracts for projects through this program, with a total investment of \$106 million in public improvements (Aulestia and Rodríguez 2013, 13). Overall, 95% of the projects collected 60% of their costs as betterment contributions (Smolka 2013, 24).



In a betterment contribution scheme, the area that benefits from a new project determines who pays the betterment contribution. In this case, those within a 15 minute walk of a new subway station pay the contribution.

*Diagram by Irene Figueroa Ortiz*

### Betterment contributions: Implications for Mexico.

Betterment contributions are another potential source of revenue for infrastructure, again reliant on a robust system of property taxes. Given the minimal implementation of property tax systems in Mexico, betterment contributions might face significant logistical challenges. They would require a concerted effort to involve neighboring property owners and households in the urban development process in order to make a clear argument for the validity of their “contribution.” Laws regarding value capture or *“plusvalía derivada de obras realizadas”* are one example of how similar strategies have been applied in Mexico in the past.

#### Takeaways:

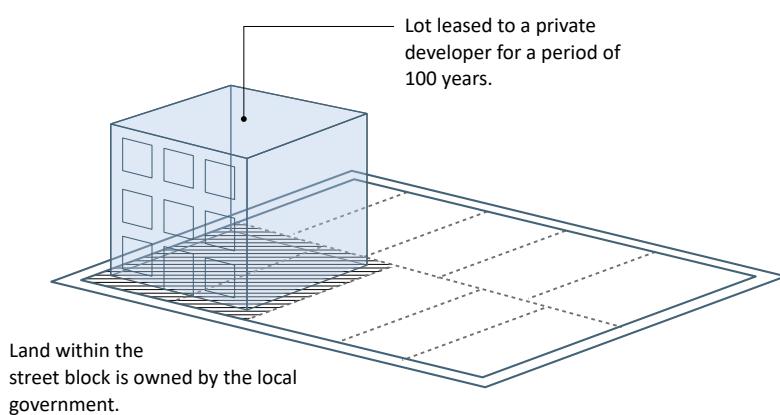
- Betterment contributions allow municipalities to recoup payment for infrastructure upgrades from the beneficiaries of those upgrades.
- Unlike TIFs or value capture, these payments are not contingent upon increases in property value or other measurable values.
- Betterment contributions allow for property owners to pay the contribution over time, although for lower-income taxpayers, even this may be a burden.
- A key component (and challenge) of implementing betterment contributions is determining the area of influence for an investment and which beneficiaries need to pay.

### 3.1.4 Land Leasing

**What it is:** Land leasing is an option for governments that own a great deal of land, or at least land in important areas for redevelopment or suburban retrofits. By leasing the right to use the land to the highest bidder, governments can use the proceeds to make infrastructure investments, or improvements to public services.

**How it works:** Unlike land disposition, a land lease program allows a government to maintain ownership of its land while still earning income from it. This is done by leasing the right to use or occupy the land to the highest bidder, usually over a long period of time, if not in perpetuity (Smolka 2013, 19). Revenue earned from land leasing can then be used to finance infrastructure and service upgrades. Alternatively, municipalities could also make infrastructure improvements to the land to be leased, financing these improvements with future revenue from the land. Land leasing strategies have been widely used in countries where municipalities have a limited ability to raise revenue. For developers, the main benefit is that they do not have the expense of buying land.

**Example:** In India, infrastructure in large urban areas is the responsibility of Urban Development Authorities (UDAs), which depend on state governments for funding. Many states do not provide these agencies with the necessary funding to properly invest in infrastructure provision and improvements (Peterson 2006, 14). However, many UDAs own large amounts of urban land that they are able to lease as an additional source of revenue. Typically, a UDA will install infrastructure on this land, and then sell or lease it to developers or other private users. Because of the value added to the land from the infrastructure improvements, the UDAs are able to



Land leasing allows local government to have long-term control over development, while enabling change in the short term.

*Diagram by Irene Figueroa Ortiz*

use the revenue from sales or leases to help fund infrastructure in other areas even after paying for the infrastructure improvements on the lands they own (Peterson 2006, 14).

### **Land leasing: Implications for Mexico.**

For municipalities and states in Mexico that have established land reserves, land leasing could be a substantial source of revenue. National policies or model regulations could help to standardize these practices, as well as incentivize the types of uses on the land in question, such as permanently affordable housing. Land leasing might be appealing even in areas with minimal land reserves, as it would enable governments to continue to exercise control over their assets. In turn, building on land that is “leased” may be appealing to developers having difficulty acquiring land or looking for more affordable acquisitions.

#### **Takeaways:**

- Long-term ownership of land can benefit municipal governments in that revenues from leasing to private entities can be an alternative way of funding infrastructure. This is particularly important for municipalities with few other financial resources.
- Land leasing also enables governments to maintain some control over the eventual development.

### **3.1.5 National, State, or Regional Grants**

**What it is:** Grants are funds that are provided by national, regional, state or other higher levels of government to local governments to use on infrastructure investments or service provision.

**How it works:** It is common for local governments to lack the financial capabilities to fund and invest in many important and necessary infrastructure projects or services. At the same time, funds

from the national, regional, or state governments might also be scarce and inadequate to fund all of the infrastructure or services needs in a municipality. Often, governments turn to grant or loan programs to supplement the funding available at local levels. Many of these programs require local governments to apply for funding for specific infrastructure or service investments, and most have requirements attached to them. In this way, higher levels of government can evaluate projects coming from local governments and fund the ones that will have the greatest impact or that best achieve the policy objectives of the national government. In addition, this adds a level of transparency to the grant or loan award process, along with a measure of accountability towards ensuring the local government spends the grant money on the project. **See the Choice Neighborhood case study in Appendix D.**

**Example:** Transportation Investment Generating Economic Recovery (or TIGER) grants offered by the United States Department of Transportation (US DOT or DOT) are examples of national grant programs that provide funding to lower levels of government for transportation infrastructure upgrades and investments. TIGER grants can go towards any number of transportation projects, ranging from road, rail, and transit to bicycle, pedestrian, and even port projects at the state, regional, or local levels of government in the United States (US DOT 2014). Agencies looking to receive funding from DOT must show how their project will provide safety, economic competitiveness, quality, livability, and environmental sustainability benefits as well as contribute to the economic recovery of the country following the 2008 recession (US DOT 2014). In this way, DOT is able to identify and fund projects that are beneficial to the country as a whole, beneficial to their local economies, as well as innovative, livable, and sustainable (US DOT 2014).



Ongoing rehab of public spaces in Colonia Primero de Mayo in Oaxaca shows how existing residential areas can be upgraded.  
*Photos: Collection of Ann Forsyth*

## National, state, regional grants: Implications for Mexico.

Providing grants can be a profound way that the federal government can incentivize good planning and development at lower levels of government. This may be particularly powerful in the context of Mexico, where urban planning and development is a decentralized power held by municipalities. As such, federal grants might help to incentivize regional planning in advance of larger funding for infrastructure. At present, the *Fondo Metropolitano* for federally recognized metropolitan areas is one such example at the metropolitan level, as well as the *Ramo 33* funds for municipalities.

### Takeaways:

- Grants can be a way of promoting higher-level policy objectives while also meeting local-level planning goals.
- This is particularly effective in countries where planning and development authority is decentralized to the local level. Grants are thus a key tool for incentivizing local authorities to align with higher-level government policy priorities.

## Benefits and Challenges of Upgrading Services and Infrastructure

### Benefits of Upgrading Services and Infrastructure

**Spurs new development:** Many times, public investment in infrastructure or services is an important way for government to spur private sector redevelopment of an area. Such actions add value to the land surrounding the improvement, which can allow landowners to feasibly develop a much wider variety of uses and building types on their property. In addition, when such investment is coupled with other redevelopment incentives, such as those made possible through TIF areas,

it signals to the private sector that the public is committed to supporting redevelopment activities and working with the private sector.

The town of Shoreline outside of Seattle, Washington (U.S.) is typical of many suburban communities. Shoreline began a process in 2005 of redesigning and retrofitting Aurora Avenue, an arterial street, running through the community (Urban Land Institute 2012, 16). Previously, Aurora Avenue was a typical American suburban arterial street: four travel lanes, heavily trafficked, highly congested, unsafe for pedestrians and drivers, and fronted by gas stations, strip malls, and convenience stores. The poor conditions for pedestrians and orientation towards automobiles seriously hindered community plans for redeveloping the area (Urban Land Institute 2012, 18).

The municipal government, with the help of state and federal funding, began a program to improve the pedestrian environment along a three-mile stretch of the avenue (Urban Land Institute 2012, 17). In addition, bus rapid transit routes will travel both directions along Aurora Avenue, with stops every half-mile. While these public improvements will certainly help make the area more accessible to pedestrians, bicyclists, and transit users, the municipality hopes that its investment will also spur private sector redevelopment along the corridor, transforming it into a vibrant commercial and retail area in a suburb lacking a downtown or “main street” (Urban Land Institute 2012, 19).

Financing upgrades in infrastructure and services is a good way for the public sector to begin the process of encouraging the development of town and neighborhood centers in suburban areas. This is especially true if the area does not have sufficient capacity to support the types of higher density development prescribed in many town center developments. Government provision of



**The Aurora Corridor Project:**  
Intervention at the intersection  
of N 160th Street improved  
pedestrian access across Aurora  
Avenue in the City of Shoreline,  
Washington.

*Photo: City of Shoreline*

infrastructure upgrades can also demonstrate to potential investors that the government is serious about facilitating new development.

### Challenges of Upgrading Services and Infrastructure

**Confronting corruption, speculation, and clientelism:** One challenge to upgrading infrastructure and services through public expenditure is the potential for this spending to be used to benefit political allies of the administration or even the local politicians themselves. Since public investment has the potential to increase land values, sometimes by a substantial degree, it is a tempting way to reward allies or enrich friends using the public purse. The potential for corruption also extends to the awarding of contracts to private firms responsible for the construction of infrastructure, with firms friendly to local politicians or political parties getting preferential treatment. This corruption is a problem as it means that public money is not being spent to maximize the benefit to the public, and in some cases results in infrastructure and services of poor quality. Worse still, such corruption can result in projects that cost more than they should. Nonetheless, there are many ways to mitigate this issue, the first of which is to make sure that decisions regarding public investment are made in an open and transparent way, involving citizens.

Cuenca, Ecuador, mentioned earlier in the report, demonstrates one example of providing citizen oversight in the planning process as well as contracting and procurement. Additionally, implementation and rigorous enforcement of value capture schemes can help as well, since landowners must compensate government for the investments it makes to their benefit. Overall, public spending should go where it will get the

most public benefit, not where it is most politically expedient. This is an issue confronted by nearly every level of government in deciding where to direct public funding.

**Overcoming limited impact:** The success and efficacy of public finance and redevelopment tools like TIFs are hard to evaluate, as there are often many different factors influencing the success or failure of a redevelopment area (Weber 2003, 63). These mechanisms can be risky, asking the municipality or local government to take on large amounts of debt with little guarantee that the increments in property tax needed to repay creditors will ever materialize. Even if they do, the net benefit to the public for the expenditures and tax diversions may be so low as to call into question the efficacy of the TIF, and whether it was worth the expense.

A study by the Neighborhood Capital Budget Group (NCBG) in Chicago, Illinois attempted to gauge the fiscal impact the city's extensive TIF program had on property values in the city. Using a sample of 36 TIF districts in Chicago, NCBG estimated that if the properties included in these districts continued to inflate in value at their historic rates, the city would have seen its property tax revenue increase by \$1.3 billion over 23 years (the length of time TIF diversions of property tax last in Chicago) (Nolan and Berlin 2002, 6). On the other hand, the City of Chicago estimated that the properties in its TIF districts would capture \$1.6 billion over that same period, a difference of only \$361.9 million. Considering other city programs and tax districts lost out on this \$1.6 billion, the study concludes that the opportunity costs of Chicago's TIF program far outweighs the additional tax revenue it creates (Nolan and Berlin 2002, 7).

Despite the challenges associated with TIF, the strategy can still be a useful tool for redevelopment in the longer term. When used to

bring new public investment to areas with poor public services and declining property values, it can be very useful in attracting new development and businesses to move into the area. However, when it is used in areas where property values are already high, or are increasing, the impact is much more limited (Nolan and Berlin 2002, 6). The example of Chicago stresses the need for local government to use this tool carefully. Many jurisdictions require that TIFs pass a "but for" test, meaning that municipalities should only use the tool when property values would not increase on their own "but for" the use of a TIF.

**Ensuring accuracy of property tax and land values:** Another challenge of many of these strategies is that they require municipalities and local government to have a good understanding of and ability to monitor changes in the land values of properties within their jurisdictions. Almost all value capture programs require that government know what property is worth before, during, and after any public investment. When this data is not widely available, or is not recorded accurately and updated frequently, it is difficult for local governments to assess the impact public investment has had on a property. This is usually not that great of an issue in jurisdictions that depend on property tax as a source of revenue, as it is in the best interest of the local government to accurately know what is owed to them by landowners. However, in places where property tax is an insignificant part of municipal revenues or is not collected, value capture strategies are much more challenging to implement and first require a comprehensive update to the cadaster and property taxation system.

## Upgrading Services and Infrastructure: Conclusions

Innovative forms of finance for development can alleviate some of the problems faced by cash-strapped municipalities needing to supply services and infrastructure in fast-growing areas or to upgrade infill sites for redevelopment. Such mechanisms do need to be calibrated to market conditions. Many also rely on having very good underlying systems of property tracking, valuation, and taxation. This may be a challenge in some Mexican local governments, particularly smaller jurisdictions. This is an area where there is great potential for innovation and where Latin America has some very interesting models.

In financing infrastructure improvements, governments need to weigh potential benefits against added financial risk that they may be taking on. Consideration of which beneficiaries should contribute payments is an underlying concern for value capture and betterment contribution schemes. Most importantly, the identification of areas where investment provides the greatest net public benefit is key. Given the large issues around infrastructure in Mexico, such a study would be well-placed.



## 3.2. Creating Neighborhood and Town Centers



### Creating Neighborhood and Town Centers

#### What It Is

- Neighborhood and town centers seek to recreate the look and feel of traditional urban centers, complete with public services, retail, office space, and residential development.
- Densities in town centers are typically higher than the surrounding suburban landscape.
- Location, accessibility, urban design, land use, public-private partnerships, and public participation are all important factors to consider in the planning, design, construction, and management of town and neighborhood centers.

Town centers provide concentrations of services and activities including business, government and civic uses, and public spaces. Here, residents gather to relax and dance in the historic center of Oaxaca, Mexico.

*Photo: Collection of Ann Forsyth*

Most urban areas typically have a concentration of activities, many in neighborhood and town centers. While their design differs greatly from historical core cities, suburbs contain many of the same functions (Phelps 2010, 71). Indeed, the emergence of so-called “edge cities” (Garreau 1992), and “technoburbs” (Fishman 1987) in the peripheries of urban areas shows that important employment, service, and retail

functions exist in the suburbs (Forsyth 2012). However, unless accompanied by strong planning, concentrating development in denser suburban centers such as office parks, malls, and commercial strips may require dependence on motorized transportation for access while encouraging sprawl by allowing people to live further and further out into the periphery of metropolitan areas.

However, many suburban residents desire access to such amenities as walkable shopping districts, well-located services, and above all, increased accessibility. It may be possible to leverage suburbanites' interest in these features to generate support for a variety of suburban retrofitting strategies, especially efforts to create neighborhood centers, town centers, and transit-oriented developments in existing suburban areas (Beyard et al. 2007, vii).

A town center is also referred to as a community center, suburban downtown, or if the scale is small, a neighborhood center. There can be multiple such centers in a single urban area. Generally, retrofitting strategies attempt to introduce walkable, mixed-use, accessible, higher density districts into suburban environments, usually centered on public space or a community service. In theory, town centers serve the surrounding 400-meter to 800-meter area, which is generally the distance most people consider a convenient walking distance. However, many town centers service a much larger area.

**The following sections include important topics planners, designers, and policy makers should take into consideration when planning, designing, and creating neighborhood and town centers. To implement changes to neighborhood and town centers, many of the policies, programs, designs, and planning approaches outlined in previous chapters can also be useful:**

- **Strategic location**
- **Accessibility beyond the car**
- **Urban design**
- **Compatible land uses**
- **Community programming**
- **Public-private partnerships**
- **Public engagement/involvement**

### 3.2.1 Strategic Location

**What it is:** The location of a new town center is one of the most important things to consider, as it will dictate how big the center can/should be, what uses it should include, and how the center is to be integrated into the rest of the community. Creating such town centers can help make developments more self-contained, meaning residents can carry out many of their normal activities locally, reducing transportation costs and demands.

**How it works:** There is no right way to locate a new town or neighborhood center, or to select an existing cluster of commercial and public uses for redevelopment or retrofit. In suburbs that are already built, the potential locations for new town centers are largely determined by the availability of parcels suitable for infill development or with high redevelopment potential. These can include privately or publicly owned vacant lots, parking lots, or abandoned or underperforming buildings ("dead malls" or under-used roadside shopping centers are typically cited in the United States). In addition, town centers should be located in areas where they are accessible and convenient to those living in surrounding neighborhoods. Typically, advocates suggest placing them near transit stations (as TODs), important street intersections, areas with existing concentrations of retail and commercial land uses, or at points along major transportation corridors (especially if they are already serviced by transit) (Newton 2013, 579). Locations should also be in areas that are not already serviced by a commercial or retail





Town center activities involve interactions between people and need to be supported by nearby housing and transportation links. Images are from Guanajuato, Oaxaca, Merida, and the Mexico City region.

Photos: Collection of Ann Forsyth

development, which could compete with the new town center.

**Example:** While locating new town centers is more an art than a science, various academics have offered techniques to assist planners, designers, and policy makers in identifying potential areas for town centers. One such method is the property redevelopment potential index (PRPI) suggested by Newton (2010). This index measures the ratio of land value of a property to the value of improvements (buildings, parking lots, etc.) on that property. PRPI values between 0.5 and 1.0 suggest that most of the value of the property comes from the land itself, and not the improvements on it, and could potentially be redeveloped (Newton 2010, 13).

Another method, suggested by Talen (2011) evaluates the urban form of suburbs. Specifically, the method evaluates sustainable urban form by accounting for the density (population per square mile), diversity of housing types (using the Simpson diversity index), connectivity (a combination of the total length of streets and the number of street intersections), and accessibility (the number of residential parcels within 500 feet of retail), divided by the area of interest of an area or potential node (Talen 2011, 961).

### Strategic location: Implications for Mexico.

There are a variety of existing situations in Mexican suburbs, and in particular in INFONAVIT developments, where implementing new town strategies might help residents achieve a better quality of life through improving access to services. In some cases that are primarily residential, businesses have sprung up rather randomly in housing that is underused. In these cases it would help to find ways to cluster shops, schools, and related businesses and offices.

### Takeaways:

- When creating new town and neighborhood centers in existing suburbs, location is a tradeoff between a well-serviced and accessible location and available underused land.
- It is important that new centers be placed in areas easily accessible through a variety of transport modes.
- In some places, former shopping centers that were developed at low densities provide good locations for redevelopment and strategic densification.

### 3.2.2 Accessibility Beyond the Car

**What it is:** Access generally refers to the ability of a resident to “reach other persons, activities, resources, services, information, or places, including the quantity and diversity of elements which can be reached” (Lynch 1981, 118). In the context of sustainable urban design, access and accessibility concern the ability of residents to reach a variety of places and services by foot, by bike, or by transit—not by automobile (Talen 2011, 955).

**How it works:** For town centers, this means creating connections to surrounding areas that are safe and encourage behaviors like walking and biking. It also means creating walkable and pedestrian friendly streets and sidewalks within the town center. While it is not possible to change locations of existing development that may be far from services and opportunities, a substantial quality of life improvement can be achieved by increasing transportation options, particularly ones accessible to all residents, including those who do not drive.

There are many ways accessibility can be encouraged by planners, designers, and policy makers. One of the most important is to ensure

**Table 3.1 Recommended residential densities and employment center sizes for transit service in the United States**

Minimum Service Level	Residential Density Thresholds (housing units per gross hectares)	Employment Center Thresholds
<b>1 bus/hour</b>	9.9-14.8 dwelling units/hectares	465,000-743,000 sq. meters commercial/office space
<b>1 bus/30 minutes</b>	17.3-19.8 dwelling units/hectares	743,000-1.8 million sq. meters commercial/office space
<b>Light rail and feeder buses 22.2 dwelling units/hectare</b>	22.2 dwelling units/hectares	3.25-4.64 million sq. meters commercial/office space

Sources: *Health and Places Initiative 2014a drawing on Design for Health 2007, 5; Pushkarev and Zupan 1977, 1982; Transit Cooperative Research Program 1995.*



To be compact, vibrant, and not have too much space taken up by parking, town and neighborhood centers typically need forms of transportation beyond the car including public transportation, cycling, and walking.

*Photo: Collection of Ann Forsyth*

that the town center can be reached by a variety of transportation modes, not just by automobile or motorbike. This may require adding sidewalks, pedestrian and bike paths, or other biking infrastructure (e.g. bike lanes, cycle tracks) to the surrounding residential areas; creating densities high enough to support regular bus services; and providing residents the option to walk and/or bike to the town center. In addition, pedestrians and cyclists must be given ways to overcome barriers, such as those created by infrastructure (e.g. highways, railroad tracks) or topography (e.g. hills, canyons, rivers) (Urban Land Institute 2012, 8). Within the town center, accessibility requires that the public realm (e.g. the streets, sidewalks, walkways) be oriented towards pedestrians in order to promote a safe, attractive, and encouraging environment for walking (Talen 2011, 955). This has the added benefit of increasing options for vulnerable groups who do not drive, such as children, older people, and people with disabilities, as well as those with low incomes who need to closely monitor transport costs.

**Example:** The Health and Places Initiative (2014a) and Design for Health projects provide guidelines for accessibility as it relates to residents and workers in a district. These include minimum densities for bus and train service in the United States. While the specific numbers may vary elsewhere—for example, in countries or regions where fewer people have cars—the general principle remains that in order to run relatively frequent service a minimum amount of development is needed.

### Accessibility beyond the car: Implications for Mexico.

Mexico has a well-developed mix of shared travel options including trains, buses, vans, shared taxis, and more. These are all more efficient when residences and/or workplaces are clustered

together. In the past 10-15 years, many Mexican cities have begun to undergo major transport and accessibility projects. In some cases—such as Mexico City—these initiatives have been a response to rapid urbanization and increased demand for more efficient access and connectivity. Some of these projects include: light rail, new metro lines, shared-bike systems, driver education, and public participation campaigns. However, at a national scale, these efforts remain incipient.

A report prepared by the Mexican chapter of the Institute for Transportation and Development Policy (ITDP) analyzed the expenditures of federal transfers for metropolitan areas (*fondos metropolitanos*) to understand how these funds are spent in urban projects that have an impact on mobility and accessibility. The report revealed that in 2012, 68% of the funds—equivalent to 4.5 billion pesos—was spent on urban mobility projects (ITDP 2012). From those funds, ITDP identified that 84% of the investments targeted automobile infrastructure such as roads and expressways rather than public transportation. This scenario brings up the opportunity to reinvest in public transport that makes it more efficient to bring accessibility to more people with less investment (ITDP 2012).

### Takeaways:

- Accessibility is a critical component to effective town centers. Town centers should be pedestrian-oriented and accessible via a variety of transportation modes.
- Transit accessibility goes hand in hand with higher density developments (such as through town centers), as the financial viability of public transit options typically increases with higher densities.

### 3.2.3 Urban Design

**What it is:** Urban design considers “the design of the built environment beyond the scale of the

building” (Jacobson and Forsyth 2008, 54). For town centers and areas around key bus and rail stations, stops, or interchanges, urban design is essential, as it is the main tool with which to adapt public policies and goals to the conditions found at a particular site (Jacobson and Forsyth 2008, 54).

**How it works:** Urban design can cover many different aspects of the built environment. Most commonly, these include the street layout, building heights and density, the placement of buildings, and the locations of parking, public space, and greenspace. While there are widely accepted principles and design guidelines for town centers and transportation nodes or centers, it should be noted that the most challenging aspect of any urban design is taking these principles and adapting them to the actual conditions that exist on the site. Challenges include incorporating the center, stop, or station into the surrounding built environment (typically low-density single family suburbs in North America), accommodating topographic and environmental constraints, and addressing community concerns about density.

**Example:** Table 3.2 on the following page provides examples of general urban design principles for town centers, including consideration of human scale in the public realm, balance in designs, or connection for pedestrians.

### Urban design: Implications for Mexico.

Similar to the discussion on smart growth and New Urbanism in the previous section, urban design standards are critical components for creating neighborhood and town centers, whether in new areas or the



“Rehabilitation and Rescue of Neighborhoods” in *Colonia Polígono 108* in Merida. The project included the rehab of residual spaces as well as sporting facilities.  
Photo: Nélida Escobedo

**Table 3.2 Urban design features in town and neighborhood centers**

Human scale	All aspects of the public realm (sidewalks, plazas, and transit stations) are scaled for pedestrians. Elements like building materials and window details, street lighting, street furniture, street trees, and public art can be used to create inviting public spaces (Beyard et al. 2007, 4).
Public Space	A plaza, town square, or park that can accommodate a variety of uses should be central to the town center. Buildings should frame the spaces, with their heights largely determined by the size of the public space. Larger public spaces can support taller buildings (Beyard et al. 2007, 5). However, public spaces that are too large tend to feel empty. Latin America has an important tradition of well-designed central plaza areas.
Connections	Provide pedestrians with multiple options for moving from place to place within the town center and surroundings. More heavily trafficked streets and sidewalks should be wider and contain more elements like street furniture. However, streets that are too wide with high vehicle speeds should be avoided. These create barriers for pedestrians (Jacobson and Forsyth 2008, 81).
Blocks	Blocks created by the street network should not be too large so pedestrians can move freely. Alternatively, superblocks can be broken up by pedestrian walkways and throughways (as is done in many newer developments in Asia).
Buildings	Buildings in town centers and neighborhood centers should be taller and of greater density than those in the surrounding area. Higher densities allow a greater concentration of uses, including housing, which in turn attracts more people and creates more vibrant and lively spaces and can support transit. They also create a landmark.
Transportation networks	Wayfinding signs and maps indicating both routes between transit modes (e.g. buses, light rail, and vans) and between transit stops and important locations within the town center are essential, as are providing amenities for transit riders, such as covered stops and places to sit while waiting.



**Table 3.2 Urban design features in town and neighborhood centers (continued)**

Green spaces	<p>Parks can double as public gathering and recreational or sports spaces. Street trees can help to mitigate heat-island effects and improve air quality, while also providing shade to pedestrians. Bioswales and other landscaping features can help to manage stormwater runoff, while also improving the quality of the streetscape.</p>	
Balance	<p>Within a town center, a careful balance needs to be struck between consistency and variety in the design, look, and feel of buildings and public spaces (Jacobson and Forsyth 2008, 79). Making spaces too similar risks making town centers bland and generic, while too much variety risks creating incoherence and confusion.</p>	

Sources: Jacobson and Forsyth 2008, 77-81; Beyard et al. 2007, 4, 23; Photos: Ann Forsyth.

many existing developments in Mexico in need of reinvestment. The pilot program “Rehabilitation and Rescue of Neighborhoods” (*Programa de Rescate y Rehabilitación de Barrios*), promoted by INFONAVIT, is a project focusing on improving public spaces in a number of older INFONAVIT developments. These rehabilitation initiatives are good examples of how to design and improve spaces to be able to perform multiple functions. It is critical that renewed design standards continue to be applied across INFONAVIT developments, particularly new housing, to ensure that developers comply with higher standards for thoughtful and effective urban design.

#### Takeaways:

- Urban design considerations contribute significantly to the integration and quality of life of new or developed areas.
- By carefully designing new downtown or neighborhood centers near transportation

nodes and integrating human-scale buildings, public spaces, road networks, and other amenities, planners and designers can help to create functional and attractive environments that provide high quality of life and promote sustainability.

#### 3.2.4 Compatible Land Uses

**What it is:** Compatibility of land uses refers to how much residential, retail, office, and/or civic space is optimal or desirable in a new development or a town center. Compatibility should be carefully considered by government, developers, and local residents. Better centers include public and civic spaces that residents can use for free.

**How it works:** Deciding which land uses to include in a town center and how much square footage to dedicate to each involves several analyses. As with any real estate development, what the local market can support should be

studied carefully and planned for accordingly. At least during the first phases of development, building housing, office, and retail space that can be absorbed by the market is crucial for the financial viability and continued success of the town center (Beyard et al. 2007, 8-9). Plans for town centers do not need to be built all at once. Phasing development can be an effective way to plan for future market demand while still including the uses currently supported by the market. Another consideration for government is if it is possible to include civic uses, like libraries, schools, or community centers in the town or neighborhood center.

#### **Compatible land uses: Implications for Mexico.**

In Mexico, given the current urban planning system, land uses are determined by local authorities through a participatory process. This is a challenging task, as it requires reconciliation of a wide variety of interests and may be greatly slowed by the need to integrate community input and approval. Furthermore, the financial burden of updating land use plans is a disincentive for many local authorities and is equally challenged by short three year mayoral administration terms. However, an improved planning process is key to avoiding the problems of the recent past including poorly serviced residential areas and abandonment.

#### **Takeaways:**

- Land use should be carefully considered to ensure compatibility for developing neighborhood and town centers. Thoughtful land use decision-making is greatly supported through community engagement and participatory strategies that seek community input on proposals.
- In land use planning, the limitations of the local market should not be underestimated. Chronically vacant commercial and office space in a town center or neighborhood

center can be just as harmful to the vibrancy of a place as strip malls or big boxes.

#### **3.2.5 Community Programming**

**What it is:** Programming is essential to create vibrant and lively public spaces. To do this, municipalities, local non-governmental organizations, private developers, and community groups should be given the opportunity to host and plan scheduled activities and events throughout different times of the day, week, and year in the town center (Jacobson and Forsyth 2008, 76).

**How it works:** The goal of programming is to attract people to the town or neighborhood center and to provide them with a common experiences. This is also what sets town center developments apart from traditional suburban retail developments, which are centered on automobiles and parking lots instead of people. In order to serve this function, town centers need to have public spaces that are large enough and flexible enough to accommodate a variety of uses and users. These can range from entertainment-oriented events like concerts, retail oriented events like farmers markets or flea markets, and public or civic events like community outreach, fairs, festivals, or civic holiday celebrations.

**Example:** In many Mexican cities, several streets in the historic centers or even main arteries are closed on Sundays to allow cyclists and pedestrians to use them, a well-loved event throughout the country, pictured on the following page in Mexico City.

#### **Programming: Implications for Mexico.**

Though often disregarded, careful programming of public spaces is a critical strategy for maintaining a high quality of life in housing developments, particularly in those regulated through condominium agreements where responsibility



Top: Paseo Dominical, part of the *Muévete en Bici* (Get Around by Bike) campaign, where streets in Mexico City are closed to automobile traffic on Sundays. The Paseo Dominical program began in 2007 by opening up the Avenida de la Reforma, one of Mexico City's principal streets, to cyclists and pedestrians. The effort has since expanded, with additional streets closed and a range of programming that includes chess games, exercise classes, and cycling education and workshops (SEDEMA 2015).

*Photo: Collection of Ann Forsyth*



The project *Pintemos México* is promoting social integration and community engagement in INFONAVIT housing developments through art interventions. This picture shows neighbors collaborating with artists to paint a mural next to the community's public space.

*Photo: INFONAVIT 2015*

over shared areas may be unclear, conflictive, and often results in neglected areas. Starting in 2013, INFONAVIT (led by the Sustainability and Technical Department) has promoted a civic engagement project in derelict developments called *Pintemos México*, or “Let’s Paint Mexico.” The main idea behind this project is to invite neighbors to work together on a project that revitalizes a public space and empowers neighbors to continue to work collectively. Other examples include the *Paseo Dominical*, part of the *Muévete en Bici* (Get Around by Bike) campaign, where streets in Mexico City are closed to automobile traffic on Sundays. The *Paseo Dominical* program began in 2007 by opening up the Avenida de la Reforma, one of Mexico City’s principal streets, to cyclists and pedestrians. The effort has since expanded, with additional streets closed and a range of programming that includes chess games, exercise classes, and cycling education and workshops (SEDEMA 2015).

#### **Takeaways:**

- Effective programming of public space can be key to attracting residents and visitors to a town center.
- When combined appropriately with urban design strategies, programming can allow multiple users to make the most of a public park or open space

#### **3.2.6 Public-Private Partnerships**

**What it is:** In the context of urban planning, public-private partnerships (or PPPs) are formal legal agreements between public sector government agencies and private sector developers to jointly plan, finance, construct, and manage a development project. Local non-governmental organizations, citizens groups, and local resident associations can also be included in these partnerships. Though important for all the strategies in this report, these are included here because they are very often a key part of redevelopment.



The rehabilitation of Calle Madero introduced new programming and brought an economic revival to the historic center of Mexico City. Top: Before rehabilitation. Bottom: After implementation.  
Photos: Autoridad de Espacio Público

**How it works:** PPPs provide a number of benefits to both the public sector and the private sector. When looking to redevelop a suburban area to build a town or neighborhood center, government should consider how it could work in partnership with the private sector. In many cases, developers will not build town and neighborhood center projects without the help and incentives governments can provide. These include government's ability to help assemble parcels for development, use public financing to upgrade or expand infrastructure or reduce the financial risk to a developer, change zoning and other development regulations, or fund social housing. In return, governments get from the private sector greater control over the plans and phasing of the development, expertise in the development, building, construction, and selling and leasing processes, and, where appropriate, privately provided public services. There are many ways public-private partnerships can be structured; however, the following are a few points that public officials should keep in mind:

- Both sides need to review what they are capable of contributing to the partnership, what aspects of a development are “must haves,” and which ones can be used in compromise with their partner.
- Government and the private sector must come together to create a vision both sides will support. This means that the goals and outcomes each partner expects from the project need to be, if not the same, then at least complementary (Corrigan et al. 2005, 8).
- The public and relevant non-governmental organizations should also be included in the creation of the shared vision for the partnership, as government goals should reflect a public purpose (Corrigan et al. 2005, 10).
- Each side needs to clearly identify their role and their expectations of the other side in a legally binding contract or agreement. Failure to do this could result in partners dodging responsibilities, placing the project and the partnership at risk. This is especially important for outlining who will maintain and manage the town center, especially its public spaces, once construction is complete.
- There are a number of different organizational formats for PPPs, from urban development partnerships to business-improvement districts. The public sector may involve existing government agencies and departments but may also include special urban renewal or redevelopment agencies. The private sector entity may be for-profit but it could involve nonprofit organizations , such as community development corporations in the United States.

**Example:** There are numerous precedents of public-private partnerships involved in redevelopment, infrastructure, and affordable housing. Though not explicitly related to creating neighborhood or town centers, one relevant example is Regent Park (Toronto, Canada), an aging social housing development that was revitalized through a public private partnership between the City of Toronto, Toronto Community Housing Corporation (TCHC), and an experienced local private developer (UN-Habitat 2011, 25). Each of the partners took on responsibility for different aspects of the process, such as infrastructure costs by the City, feasibility studies and limited funding by the Housing Corporation, and project financing and construction oversight by the developer (UN-Habitat 2011, 26). In this case, a larger and more extensive redevelopment project was made possible through a strategic partnership with shared goals. By sharing risk among partners, both the benefits and challenges of redevelopment process are distributed more equally. In order to ensure transparency, the project was organized into distinct phases and contractual agreements were put into place to assess the performance of each partner throughout the process. Although evaluation is still ongoing, the project was intended as a mixed income community, with opportunities for affordable homeownership and an explicit emphasis on consistent community engagement (UN-Habitat 2011, 27).

### **Public-private partnerships: Implications for Mexico.**

Public-private projects that include social housing in their scope are an untapped strategy in Mexico. *Asociaciones público-privadas*, as they are known in Spanish, are gaining popularity as a more formal strategy for urban development investments, particularly for infrastructure projects requiring collaboration between the public sector and private investors. Nonetheless, coordination among stakeholders and mediation of interests remains a main barrier for these projects. Very few examples can be seen of partnerships that integrate a social housing component, though this could be a very suitable fit for projects that involve major public transportation investments, campus expansions for universities, or economic development initiatives to attract employers to urban centers. More discussion about this is presented in the accompanying governance report.

#### **Takeaways:**

- Public-private partnerships are a model through which a number of the strategies outlined here can be achieved (value capture, tax increment financing, etc.).

- The more ambitious or complicated the project undertaken by the PPP, the more likely it is to run into problems and the higher the development risk.
- In jurisdictions with little experience with PPPs, it is best to take on simple, smaller projects first.

### 3.2.7 Public Engagement/Involvement

**What it is:** Public engagement and involvement entails soliciting input from area residents in the planning of a new development or redevelopment of a project. As developments depend on their ability to attract residents from the surrounding area, it is imperative that they are planned, designed, and built with considerable input from the people they are meant to serve.

**How it works:** A goal of any successful town or neighborhood center project should be to create and foster a connection between the area's residents and the development. The center should reflect the qualities and characteristics of the community in which it is located. The easiest way to do this is to simply ask residents what they would like their town or neighborhood center to be, and to involve them in as many aspects of the planning, design, and management of the project as possible.

**Example:** The Fruitvale TOD development in Oakland, California (U.S.) is a good example of a project that was improved by participation and input from local residents. Fruitvale used to be one of the poorest neighborhoods in the City of Oakland (Jacobson and Forsyth 2008, 68). In the early 1990s, the local transit authority, Bay Area Rapid Transit (BART), wanted to expand existing parking lots surrounding the Fruitvale station. Local residents and businesses opposed this plan, as it would negatively impact the potential of the area to support residential and commercial developments. In the face of this opposition,



The Fruitvale station area in Oakland, California, was redeveloped with substantial affordable housing and well-designed public spaces.

*Photos: Collection of Ann Forsyth*

BART decided instead to collaborate with the community (Jacobson and Forsyth 2008, 68). In place of parking lots, the area surrounding the station is now host to a 20-acre TOD project that includes affordable housing, neighborhood retail, public space for community events, and a variety of civic facilities such as a library, a medical center, a senior center, and a child development center (Jacobson and Forsyth 2008, 68).

### **Public engagement and involvement: Implications for Mexico**

Public engagement and involvement is not yet a common practice in the housing development process in Mexico. Participation can be very useful in tapping into local interests and needs in new construction or in redevelopment projects, as has been shown in some of the redevelopment projects carried out by INFONAVIT's Sustainability and Technical Department. Engagement and involvement could play a key role in helping new developments to better integrate into existing areas, particularly when new developments in peripheral areas may be seen as very disruptive to existing agricultural activities or a more traditional way of life.

#### **Takeaways:**

- Public engagement during stages of the planning process can increase local acceptance of a town center development.
- Community participation helps to ensure that the development is oriented toward the desires and needs of residents.
- Engagement is important not only to the appeal for residents but also for the financial success and vibrancy of the town center.

## **Benefits and Challenges of Creating Neighborhood and Town Centers**

### **Benefits of Creating Neighborhood and Town Centers**

**Diversified housing choices:** Currently, the only housing option in many outer suburbs is a single detached house or a very limited range of apartments. Residential components of neighborhood or town center developments provide opportunities for a wider variety of housing types. This helps to create a more diverse and inclusive community, while at the same time allowing current residents to change their living situation to match their life stage (e.g. a couple with grown children who no longer live with them might find it desirable to move from their single family house into a smaller condominium or apartment).

Increasing the diversity of housing choices also refers to the tenure options available in a community. Providing options for renters as well as for homeownership is an important change in the traditional suburban community. Adding new housing types to suburban areas is important as it allows these areas to accommodate residents from a variety of socioeconomic backgrounds and at various points in their lives. People with a range of backgrounds and with differing needs and financial resources might wish to live in suburbs in order to access amenities like more expansive open space or convenient shopping, or because the location is convenient to certain job opportunities.

Furthermore, in North America, many suburban areas are facing the challenge of how to accommodate aging populations. Such households do not want to leave their suburbs and communities and instead prefer to “age in place” or “age in community,” but their detached home is not an ideal environment for elderly people. If town centers with more diverse housing options

existed, these households would not have to face the choice of moving into a home that better suites their lifestage but needing to leave their community and the social relations that they may have developed there. Planning for this flexibility is desirable, as it allows suburbs to adapt to changing demographic characteristics of their inhabitants, whatever they may be.

**Greater access to services:** Inserting town and neighborhood centers into suburban areas is a strategy to provide residents with access to commercial, retail, and institutional services that they normally would otherwise need to travel long distances to reach. This is especially the case when town center developments are coordinated with efforts to increase pedestrian, bicycle, and/or transit access. Improving access is important, as some populations, like older people and children, are not able to drive, or are unable to afford an automobile.

In a survey of travel behavior among residents in neighborhoods surrounding commercial centers and commercial strips in the South Bay area of Southern California (U.S.), Boarnet et al. (2011) found that for residents who lived near town centers “the percentage of their trips to the neighbourhood centre that were via walking ranged from 26.23 percent in Inglewood outer ring to 70 percent in Riviera Village inner ring” (Boarnet et al. 2011, 137). On the other hand, for communities without town centers, “the range was between 3.60 per cent (Gardena outer ring) and 24.41 per cent (Pacific Coast Highway)” (Boarnet et al. 2011, 137-8). In other words, even when controlling for sociodemographic characteristics, which sometimes can affect a person’s likelihood of walking more, residents living near town centers walked more (Boarnet et al. 2011, 138). Furthermore, residents living near town centers made shorter trips for meals, groceries, personal services, school, meetings, and entertainment compared to those living near commercial strips (Boarnet et al. 2011, 139).

While there is evidence that living near a town center that supplies commercial, retail, and employment functions encourages more people to walk to these services, this relationship is not guaranteed. Designs and policies that encourage walking and discourage driving are needed to ensure that these benefits actually materialize. Examples include building or improving sidewalks along streets and roads, creating ways for pedestrians or bicyclists to overcome barriers created by more heavily trafficked roads and other infrastructure, creating pedestrian and bicycle paths that connect the town center to the surrounding area, or increasing transit service, not just to the town center, but to the surrounding area as well. Transit service should be easily and safely

accessible, with a bus shelter, benches, and proper lighting, to make any wait time safer and more comfortable. These sorts of measures may be particularly important for elderly residents or those with limited mobility.

**Activity centers to support transit service:** Transit service can be difficult to expand into suburban areas for a number of reasons, one of which is the lack of appropriate population densities to support the service. Building town centers can help to address this issue, especially when they include higher density residential developments within the center. This increased density allows more people to live within walking distance of a transit stop, while also making more types of transit services viable. On the other hand, where transit stops already exist in suburban areas, town center development can help to increase ridership by increasing the number of people who live near the station. In addition, the commerce, retail, and other employment or services located in the town center can become an easily accessible destination for other people in the region who live along the transit line, or have access to the transit system.

### Challenges of Creating Neighborhood and Town Centers

**Difficulty of accessing financing:** Financing mixed-use town center projects can be difficult for private developers for a number of reasons. A major barrier is that lenders and investors in real estate evaluate the risk and reward of a project based on the performance of similar projects in the market, among other criteria (Cowan 2012, 223). Oftentimes, mixed-use town or neighborhood center projects lack any comparable development in the market, and therefore are unattractive to most investors and lenders because of perceived risk. Another barrier is the typical timeframe on which real estate investments are made. Most investors are interested in their rate of return from the project based on a 5-year timeframe. However, most large town center redevelopment projects take much longer than 5 years to reach completion. This length of time, from an investor or lender's perspective, increases the risk associated with the project and reduces expected returns (Cowan 2012, 224). One reason that town center development can take a long time is that it may require extensive parcel acquisition or reshuffling of parcel ownership, which can become a contentious and costly process (a challenge that can be addressed in part through Land Readjustment strategies, addressed in **Part 1.2** of the report).

Given the difficulty of funding town center development projects, many developers depend on partnerships with governments to make such

projects feasible. Belmar, in the Denver suburb of Lakewood, Colorado (U.S.), is a good example of a project made possible through the cooperation of public and private actors. Built on the site of a failing shopping mall typical of many American suburbs, the Belmar project was designed as a “downtown” area for Lakewood, which previously lacked any such area (Urban Land Institute 2012, 23). To make such a development feasible, the city partnered with Continuum Partners, a local developer, to provide funding for many of the infrastructure improvements on the site. In the first phase of the development, Continuum Partners invested a total of \$243 million, \$60 million of which came from public sources in the form of loans and bond revenue. Another \$143 million came from bank loans (Iams et al. 2006, 36). No doubt these loans were much easier for the developer to secure thanks to the support from the public sector.

The difficulty for private developers to secure funding on their own to build town and neighborhood centers means that government must play an active role in partnering with the private sector in order to make these types of development more feasible. The public is in a uniquely powerful position to use a variety of financing mechanisms, as outlined earlier in the report, to help make town center developments possible when lenders and investors refuse to finance them. Public involvement and community engagement are also key in helping to ensure that a town center development serves local needs and interests.

**Regulatory barriers:** The mixed uses and high densities needed for town and neighborhood centers are often not possible under current development regulations. To encourage such developments, governments and planners should amend zoning and land use regulations to allow mixed land uses in areas deemed appropriate for town center developments. Unless these changes are made, developers will be discouraged from becoming involved in town center or neighborhood center developments, as the time and money costs needed to receive approval for such projects is substantial.

Ideally, zoning and land use changes would be made as part of a greater regional planning process in which planners, policy makers, and the public identify where town centers and neighborhood centers should be located. Such a process allows for public input into any changes, as well as allowing governments throughout a region to coordinate the location of their town centers to help ensure their viability and success. It also allows such changes to be made in coordination with public transit agencies, creating the possibility of town centers better serviced by public transit. Either way, amendments to regulations need to occur, as

Following page: Automobile-oriented retail developments make it hard to create vibrant town centers. They can be modified with development controls.

Photos: Collection of Ann Forsyth



the barriers created by regulations also exacerbate those created by financing practices. The added time and expense needed to change regulations for a specific project greatly adds to the risk of the project as a whole, making it less attractive to investors and thus less likely to move forward.

**Parking demands:** While it is not possible to completely eliminate parking from town and neighborhood centers, providing too much parking wastes valuable space, and can be a detriment to the walkability of the town center (Dunphy et al. 2003, 10). In addition, lenders, tenants, and other actors necessary for a successful town center will have their own requirements and demands for parking. To the extent possible, government should try to encourage and facilitate creative and innovative approaches to providing parking, such as making changes to the zoning requirements or instituting shared parking arrangements. In addition, government should also seek to extend or improve public transit services to surrounding residential areas, and encourage residents to walk to the town center in order to reduce the demand for parking. Such efforts might take a while to significantly impact travel behavior. In the meantime, parking lots can be provided on a short term or temporary basis, serving as a land bank for future development and expansion in the town center.

**Large-scale retail industry:** Retail practices in North America, Australia and elsewhere do not favor smaller retail developments. Instead, the common model is to create so-called “big box” shopping centers that serve a large portion of a metropolitan area (Curtis and Punter 2004, 52). When town center developments have been successful, they have often worked with such retail types, integrating them with smaller scale, specialized vendors, or they have benefited from stronger planning policies that integrate big boxes within main streets. A positive case is Sydney, Australia, where strong planning controls have

limited big box developments and placed many in traditional main streets with big boxes taking up the interior and rear parts of blocks that front on active shopping streets (Forsyth 1997). This is a model that can be seen elsewhere in Australia, the UK, and Canada. It is even visible in the U.S. in the centers of large cities where chains such as Target and Kmart have experimented with multi-floor variations.

The challenges presented by traditional retailing practices must be addressed for a number of reasons. First, if commercial components of development fail to attract and/or retain tenants, then developers will no longer want to include them in their developments (Curtis and Punter 2004, 52). Preventing the creation of more retail shopping centers in the metropolitan area (through restrictive planning and zoning) is one way to begin to shift retail back into local and decentralized yet concentrated locations. However, this strategy requires taking on sometimes powerful and influential interests in the retail and development industry (Curtis and Punter 2004, 53). Encouraging suburban shopping centers to more closely resemble town centers (by adding residential land uses or introducing transit) must also be considered.

### **Creating Neighborhood and Town Centers: Conclusions**

Creating centers, while not simple, is an excellent way to bring services to people and also provide concentrated areas that can be more easily served by buses and other public transportation. The construction of attached housing at town centers can also help to expand housing options in suburban areas. This strategy of building town centers requires careful planning to make sure that such centers are in locations where they will be successful. Factors that must be considered in locating town centers include the feasibility of parcel assembly and redevelopment, the need for

easy accessibility, and the potential for competition with retail located in auto-oriented locations. Public-private partnerships will likely be essential in the development of a town center. The public sector has the opportunity to mitigate financing barriers that would otherwise prevent the creation of centers, and government agencies also play a central role in helping to ensure that these developments serve the public interest. Numerous design and programming measures can improve the pedestrian environment and vibrancy of town centers.

In Mexico, “action areas” can be created to incentivize some of the strategies suggested in this chapter. These special zones are designed to provide higher densities and flexibility of uses. *Distrito Tec*, located in Monterrey, is an example of the use of these zoning “action areas.” Initiated by the Tec de Monterrey, an internationally renowned Mexican university, the project proposes to rehabilitate the entire influence area of the university by collaborating with private developers and the municipality. The project will be revised and implemented through a participatory approach with local property owners and neighbors. Moreover, in consolidated urban areas, some efforts in this direction have taken off. One example of this is the Rehabilitation of *Colonia Primero de Mayo* in the City of Oaxaca. This project, initiated by INFONAVIT and financially supported by the local and state governments of Oaxaca, coordinated the rehabilitation of the public spaces, community center, and shopping areas of one of the first housing developments built in the city more than 30 years ago.



## 3.3 Linking Housing to Jobs



### Linking Housing to Jobs

#### What It Is

- **Linking housing to jobs encourages commercial development and residential development to occur in a community simultaneously.**
- **Residential development should be affordable to a range of income levels, as jobs in a community will pay wages of varying levels.**
- **Financial incentives to workers and employers, while potentially expensive, can encourage residents to live closer to their place of work.**

Many planners, policy makers, and urban designers stress the importance of creating mixed-use locations that improve residents' access to retail, services, and other types of commerce. Equally important, however, is the need to ensure a spatial match between residents and jobs. Spatial mismatch is a term used to describe the phenomenon whereby jobs (especially jobs for which residents are qualified to fill) are not located near housing for employees. Indeed,

One reason for housing vacancy in Mexico is that travel time to employment is too great. Abandoned homes in a social housing development in Merida, Mexico are pictured here.

*Photo: Collection of Ann Forsyth*

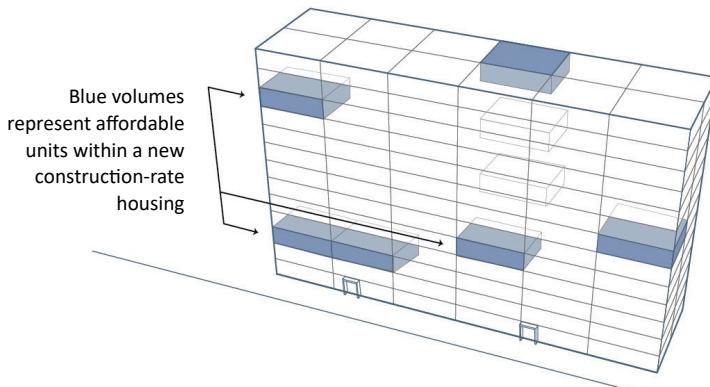
the office park or suburban campus design of many suburban employment centers in North America suffer from the same issues that face suburban malls and retail centers: they are located far from the people that they serve, and thus necessitate automobile use (Horner and Mefford 2007, 1421). Even for highly mobile suburban residents, the location of jobs in suburban areas can be a challenge requiring longer commutes in terms of distance and time (Cervero and Wu 1997; Cervero and Wu 1998; Levine 1998).

Mixed use and other design-based remedies promoted by advocates of smart growth and new urbanism may not be enough to right the imbalance between jobs and housing that exists in many suburban communities. The result is an environment in which jobs and housing are increasingly located farther apart. Planners and policy makers can encourage more housing near jobs and commercial areas. However, because different household members typically work in different places, it is not possible to completely match housing and job locations.

There are a variety of strategies governments can use to encourage the linkage of jobs to housing and vice versa. They run from regulatory changes that require residential developments to accommodate a variety of income levels to requirements that commercial developments house a certain percentage of the employees in the local community. Another strategy seeks to reduce the competition among local governments for land uses that generate large amounts of property tax and other local benefits, while requiring little spending on municipal services. In addition, governments can provide financial incentives to encourage workers to live near where they work or to encourage employers to hire employees in the local community. A related strategy, not discussed here, is to improve transportation in underserved areas to better link jobs and residents, though such programs can be extremely useful. They are typically outside the domain of housing and urban development agencies.

**The following sections discuss these strategies related to urban development in further detail.**

- **Inclusionary zoning**
- **Commercial linkage**
- **Tax-base sharing**
- **Financial incentives for workers or municipalities**
- **Financial incentives to hire local workers**



Inclusionary zoning provides incentives for developers to build affordable units in market-rate apartment buildings.

*Diagram by Irene Figueroa Ortiz*

### 3.3.1 Inclusionary Zoning

**What it is:** Inclusionary zoning refers to regulations that require or encourage new residential developments to include a certain number of affordable housing units. Sometimes they obtain benefits in return such as increased building height or density. The definition of affordable is different depending on the jurisdiction, but the overall goal is to encourage the construction of housing units that are affordable to a wide range of buyers or renters.

**How it works:** Inclusionary zoning seeks to prevent zoning practices that effectively exclude certain populations and socioeconomic groups by limiting the types of housing that can be built. In contrast, inclusionary zoning requires or recommends that developers provide affordable housing units as a part of their development or make a payment into a government fund for the creation of affordable housing at another site. In cases where the developer builds the affordable units, the number of affordable units is usually specified as a percentage of the total units to be built (Lerman 2006, 385).

How affordability is defined differs by jurisdiction, but generally it is defined as a percentage of the median income of the county or metropolitan area. Additionally, most units created through inclusionary zoning are only required to remain affordable for a certain period of time before they can go back to being priced at market rates (Lerman 2006, 385).

In return for providing affordable units or payments to an affordable housing fund, most programs award density bonuses to developers,

allowing them to build more units than possible under current land use regulations. While this type of strategy is used as a way to provide affordable housing, it can also help address the jobs-housing imbalance in a community, by providing housing opportunities for anyone who works there no matter their income level. While some inclusionary zoning mandates for affordable housing can be very strict and uniform, others are very flexible, with different requirements for affordable units or income based on location and market strength.

**Example:** In the United Kingdom, the Town and Country Planning Act of 1990 introduced new powers to local planning authorities to require the provision of affordable housing (Murphy and Rehm 2013, 8). Inclusionary zoning practices in England require developers and planners to meet to negotiate the number of affordable units the developer will provide. This is done using the proposed project's financial information submitted to the planning authority by developers and focuses on residual land values and developer profits (Murphy and Rehm 2013, 9). The analysis determines how many affordable units the developer can provide while still keeping the project financially feasible (Murphy and Rehm 2013, 11). This approach takes into consideration the variation in land values in different areas of a city, creating site-specific requirements. Generally, it results in more affordable units in less affordable housing markets (Murphy and Rehm 2013, 11). While it also means that lower values areas will have fewer affordable units, these areas tend to have more affordably priced housing.

### Inclusionary zoning: Implications for Mexico.

Such approaches could be useful in hot markets in Mexico where development pressures mean that it is difficult to provide lower-cost housing near jobs and where profits are such that inclusionary requirements are not a deal breaker. They can

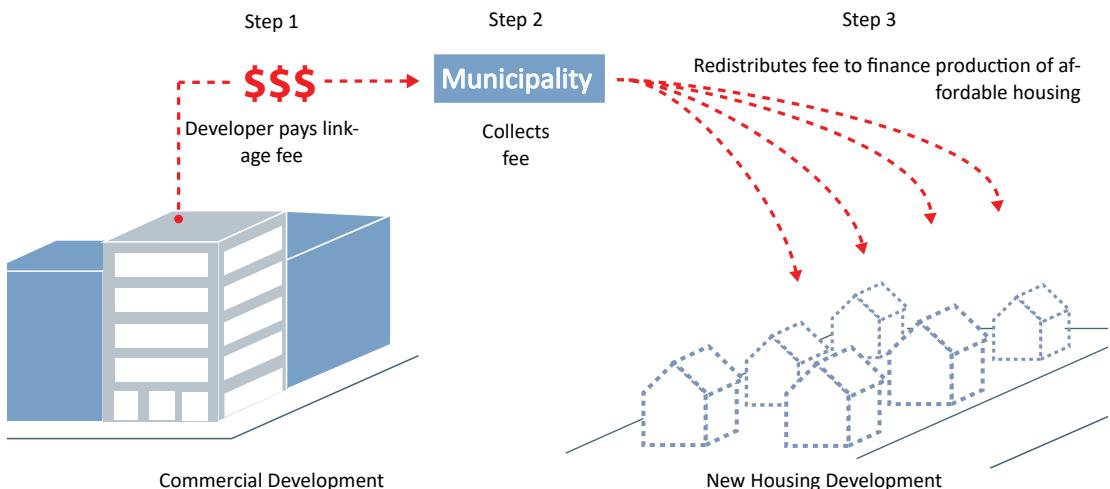
also work where developers would appreciate being able to build more units on a parcel. However, these initiatives are very valuable and should be promoted, especially in private-public partnerships where developers and municipalities have a win-win situation. Both need to have a vested interest in providing more social housing options within consolidated urban areas.

### Takeaways:

- Inclusionary zoning is a planning tool that promotes the creation of new affordable units to enable people to afford to live in or near the communities where they work.
- Depending on the agreement, affordable units can be located on or off-site, allowing flexibility for both the municipality and the developer to determine the best outcome.
- If perpetual affordability restrictions are not put into place, the social benefits of inclusionary zoning may be minimal if units quickly revert to market rate rents or sales prices.
- If improperly formulated or implemented, inclusionary zoning strategies can discourage new development by reducing the financial returns of projects. A good strategy to incentivize developers is through negotiations with government agencies and community organizations based on site-specific variables.

### 3.3.2 Commercial Linkage

**What it is:** Commercial linkage is a type of exaction or impact fee that requires developers of commercial projects (usually office projects, but can be extended to other commercial uses) to provide housing or pay a fee for the local government to build housing in which some proportion of the people who will be employed in the finished project can live. Broadly, this strategy seeks to link commercial development



in a jurisdiction to residential development in order to prevent the development of one from outpacing the other.

**How it works:** There are two ways linkage programs can work. The first is by charging developers of commercial projects (usually ones that exceed a specific size threshold) a fee based on a specific metric, such as square feet of development (PolicyLink 2002, 1). The fees collected through these charges go into a municipal fund, which is used to build housing. Alternatively, linkage programs also require the developer of the commercial project to include housing, either on- or off-site. The number of units can be determined various ways, although it usually prescribes one housing unit per some number of square feet. It is common for this housing built through linkage programs to have income restrictions attached, decided in a manner similar to the approach taken in inclusionary zoning schemes. Through both of these approaches, municipalities are able to provide opportunities for workers to live close to where they work (PolicyLink 2002, 3).

### Commercial linkage: Implications for Mexico.

Much like inclusionary zoning, commercial linkage programs work best in areas where growth is strong. By levying fees on commercial developers or corporations (as they invest in new office buildings or employment centers), employers are thus brought closer into the process of sharing some of the responsibility for housing their employees. Though linkages are implemented by local governments, this type of arrangement could be negotiated or facilitated in part by INFONAVIT, as they already have institutional arrangements with employers as part of their tripartite structure.

In commercial linkage programs, private developers of commercial buildings are required to provide affordable housing for potential workers.

*Diagram by Irene Figueroa Ortiz*

### Takeaways:

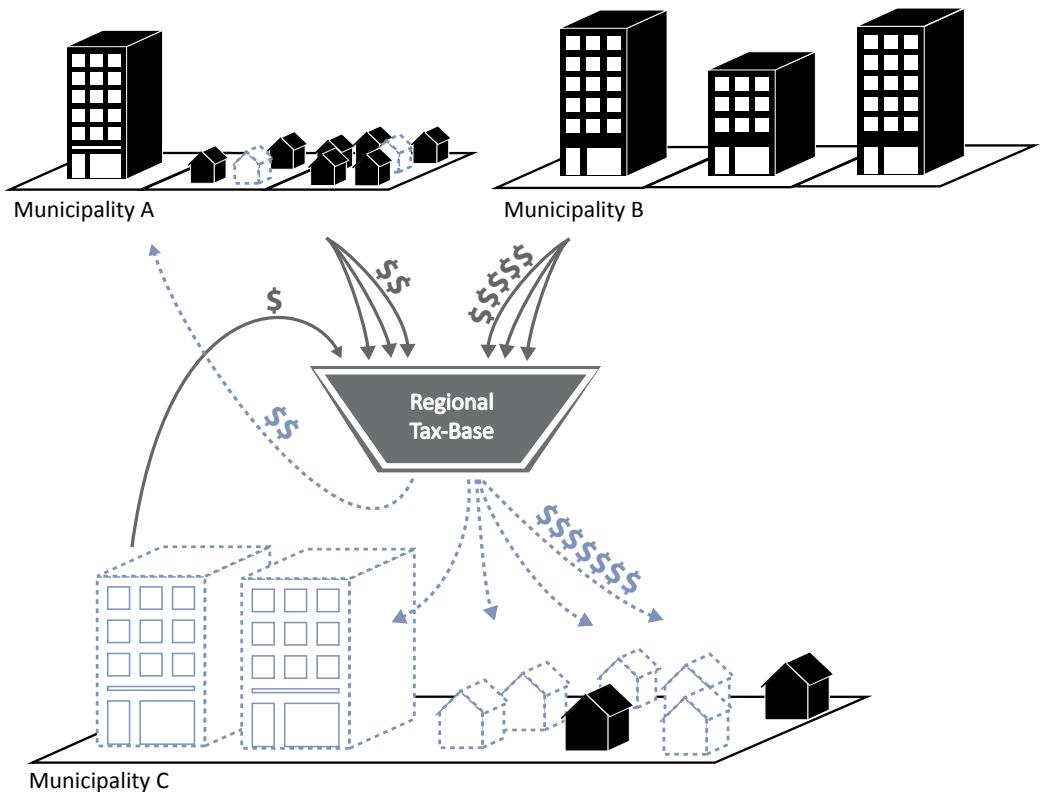
- Commercial linkage involves working with corporations and commercial developers to create nearby housing, balancing commercial and residential development, typically through fees imposed on developers.
- Linkage may be challenging to implement in a less competitive market, where developers may already be reluctant to invest and municipalities are more interested in offering development incentives than fees.

#### 3.3.3 Tax-Base Sharing

**What it is:** Tax-base sharing programs combine a certain percentage of the property tax revenues of municipalities in a metropolitan area into a region-wide pool. The funds in the pool are then redistributed to the contributing municipalities using a set of criteria typically related to population, tax base, or service provision need (Luce 1997, 1). This aims to disincentivize municipalities from competing for development that uses the fewest municipal services. Tax-base sharing requires a regional, state, or national government to manage the system.

**How it works:** While tax-base sharing schemes help to reduce competition between local governments for business development and to promote equity among municipalities within a region, they also can be used to counter distortions in regional housing markets. In municipalities that depend on property tax as a major source of revenue, there is an incentive to seek to maximize this revenue source by zoning only for land uses that generate high property values while also requiring as few municipal expenditures as possible (Luce 1997, 5). In suburban America, this exclusion usually takes the form of zoning restrictions that only allow single family homes built on large lots, or that attract large commercial developments that pay taxes but require few local services such as schools. While not explicitly exclusive, such regulations typically result in low- and middle-income resident households not being able to afford a house in the community. By sharing taxes, this incentive is reduced, as tax revenue is redistributed to municipalities based on population or need to pay for services. It makes taxation more regional and similar to countries where infrastructure is paid for by regional, state, and national governments rather than local ones.

**Example:** The Minneapolis-Saint Paul metropolitan area (also known as the Twin Cities) in the United States is one of the few metropolitan areas to have implemented a tax-base sharing scheme in the country.



Tax-base sharing programs assist comprehensive regional planning by reducing the incentives for particular local governments to seek development to increase property taxes even when it is not well located. Benefits of development are instead shared through the whole region. Gray arrows represent input of taxes into a shared tax base. Blue arrows represent output of economic resource to support development.

*Diagram by Irene Figueroa Ortiz*

The program, known as the Fiscal Disparities Program, began in 1975 to “provide a way for local governments to share in the resources generated by the growth of the area,” “increase the likelihood of orderly urban development by reducing the impact of fiscal considerations on the location of business and residential growth and of highways, transit facilities, and airports,” and to “encourage protection of the environment by reducing the impact of fiscal considerations so that flood plains can be protected and land for parks and open space can be preserved,” among other rationales (Hinze and Baker 2005, 5).

The program requires all local governments and special districts located within the seven counties of the Twin Cities metropolitan area to contribute 40% of the growth in their commercial and industrial property tax base since 1971 (when the program was approved by the Minnesota state legislature) to the regional fund. This revenue is then redistributed based on a formula that multiplies the population of the municipality by the ratio of the average fiscal capacity of all municipalities to the fiscal capacity of the particular municipality. (Hinze and Baker 2005, 7). The result is called the Distribution Index which is then divided by the sum of the distribution indices of all other municipalities in the metropolitan area to determine the money to which each particular municipality is entitled (Hinze and Baker 2005, 10). In short, it takes away the incentive of local governments to attract the highest net tax paying developments, as all taxes need to be shared.

### Tax-base sharing: Implications for Mexico.

Tax collection is one of the main areas of opportunity in Mexico for tapping additional sources of funding, especially at the local level. Local property taxes are the only taxes that are kept by the municipality. However, given low collection rates, many municipalities still rely on federal transfers for providing services. Tax-base sharing could be particularly useful to put into place at the metropolitan level through metropolitan planning institutes, or through the help of state planning or finance departments. Tax-base sharing could be aligned with cadaster upgrading.

### Takeaways:

- Tax-base sharing can reduce the incentives for individual municipalities to promote one or two kinds of development—those that are most financially advantageous—at the expense of a regional balance.

- Countries where most taxes are collected at the state, provincial, or national level can achieve a similar result if they prioritize such redistributions.
- This mechanism is one that would be aptly implemented by a metropolitan planning agency or authority.

### 3.3.4 Financial Incentives for Workers or Municipalities

**What it is:** Financial incentive programs for workers are run by the public sector or employers to provide workers with financial incentives for living near their place of employment. Similarly, higher levels of government can also offer financial incentives to municipalities that have many jobs to zone for more residential land or to increase the supply of housing in those communities.

**How it works:** For workers, the incentive program rewards those who decide to live within a certain distance of their place of work. This reward can take many forms, but in most programs it provides financial assistance towards buying a home in areas prioritized for residential development that are located near the worker's place of employment (Andersen and Woodrum 2012, 1). In most cases, these programs are run as public-private partnerships, with both government and employers contributing to the incentive reward (Andersen and Woodrum 2012, 1). Alternatively, national and state governments can provide financial incentives to local governments to encourage the production of housing. Such programs can be designed to provide larger rewards for municipalities that build multi-family housing, affordable housing, or infill housing or for municipalities that have a large number of jobs relative to surrounding municipalities (California Department of Housing and Community Development n.d., 3).

**Example:** The Jobs Housing Balance Program was a statewide program started in 2001 in California, U.S., designed to increase the availability of housing in municipalities that were experiencing high rates of job growth, especially where the rate of job growth exceeded the rate of housing construction (California Department of Housing and Community Development n.d., 4). To qualify, municipalities needed to show an increase in the number of construction permits of more than 12 percent as compared to the average number of permits issued in the previous three years (2000, 1999, and 1998) (California Department of Housing and Community Development n.d., 5). Rewards were given to municipalities that surpassed the 12% increase in housing permits based on the number of permits issued in excess of this threshold. The per unit reward was also weighted based on the rate of job growth in

the municipality, with high-growth municipalities receiving a greater per unit amount than those with lower rates of job growth (California Department of Housing and Community Development no date, 6).

### **Financial incentives for workers or municipalities: Implications for Mexico.**

Given the institution's tripartite structure (employers, workers, and government), INFONAVIT is uniquely placed to help create a program of this kind that reflects the interests of all three stakeholders simultaneously. Though this coordination operates effectively at the federal level, it is critical to bring coordination to the local level to help implement initiatives to incentivize workers to live closer to their workplaces.

#### **Takeaways:**

- Financial incentives for workers to live near housing work best when such housing is indeed available.
- This strategy may not apply for all household members when income earners have jobs in different locations.
- Incentives for employers to provide housing near employment increase the choices of those who are able to move closer to their work places.
- These programs can be designed to contribute to other social and development goals, such as promoting construction of affordable housing and infill development.

### **3.3.5 Financial Incentives to Hire Local Workers**

**What it is:** Governments can offer financial incentives to employers for hiring workers in their local community. If qualified workers do not live nearby, then government can also engage in job training schemes to ensure that local workers, especially those currently without jobs, are equipped with the skills and training necessary to be qualified for jobs in their community.

**How it works:** There are many ways governments can encourage employers to hire local workers. Generally, they involve the public sector giving businesses some type of financial incentive for hiring people that live in the local area. These incentives can be provided as wage subsidies, tax credits, or requirements for city contracts, among others. In this way, a municipality can meet the employment needs of its residents as well as its businesses. When unemployed workers are not qualified for the jobs offered by local businesses, job

training programs funded by the municipality or in partnership with the private sector are ways government can invest in the human capital of its residents, while at the same time helping them to find jobs.

**Example:** Since 1986, the City of Berkeley in California (U.S.), has run a program known as First Source, which seeks to “connect residents with local employers by developing agreements for employers to interview local candidates first” (ABAG 2014). A business’s participation in the program is a condition for the approval of permits, city contracts, or to receive financing or funds from city government. The program connects pre-screened residents seeking employment with employers, who are required to interview them before they interview any other candidates. Final say over hiring is left to the business. The program has been successful among local businesses, with 200 to 300 participating voluntarily. Between 1986 and 1997, First Source helped to place 2,344 residents in jobs (ABAG 2014).

#### Financial incentives to hire local workers: Implications for Mexico.

Collaboration between housing, urban development, and employment agencies could foster these kinds of training programs to help place workers in jobs near their residences. As part of a transparent and public economic development planning process, Mexican municipalities can engage more closely with corporations or employers to help designate areas that are accessible and suitable for commercial development, and in turn help to develop programs that support job preparedness for the workforce.

#### Takeaways:

- Employment training and incentives can help match workers with local jobs, better equipping residents to find work close to their home or accessible via public transportation.

### Benefits and Challenges of Linking Housing to Jobs

#### Benefits of Linking Housing to Jobs

**Social equity:** Policies that encourage the production of housing, especially affordable housing, in areas with job options increase the diversity of communities, potentially reduce travel time, encourage social integration of different populations, and provide economic opportunities. Zoning and land use regulations in American suburbs have long been used as tools to promote spatial segregation of groups based on ethnic, racial, and economic differences. More recently, these same regulations have been reversed in an attempt to promote greater social equity.

**Economic growth and productivity:** When housing and jobs are better linked, the logic follows that the economic productivity of workers will be improved. Ideally, better linkages will enable workers to more easily find housing closer to their workplace (with more housing tenure types and options that are suitable to their household makeup and income), spending less time commuting, and even spend less money on the commute itself. Additionally, in the process of working more closely with major employers, corporations, or commercial developers to designate areas for commercial development, local governments will ideally improve their planning process and hopefully pave the way to encourage more development through strategic public investments or streamlined permitting processes.

- Job training and financial incentives for employers requires collaboration between employers, workers, and local governments.

## Challenges of Linking Housing to Jobs

**Incompatible mixed uses:** Where local or metropolitan economies are still dominated by industrial and manufacturing jobs (true in many Mexican cities), living close to places of employment might not be a positive outcome. This may be the case with industrial land uses that create pollution and other environmental and health hazards, or because the design and physical layout of these places are not conducive to walkability or connectivity. Despite this challenge, the need to facilitate accessibility to jobs is no less important. Linking to jobs is not only about physical proximity but also about transportation access. Creating ways for all populations to reach jobs, including those who do not have access to automobiles, is an essential aspect of economic and social development.

**Lack of good metrics for connectivity:** One of the largest challenges in linking residential areas to employment areas is in how to measure the extent to which these linkages exist. There is no real consensus among planners and policy makers about what constitutes an adequate or sufficient connection. The concept of linking to jobs has been captured in a number of theories and concepts, such as jobs-housing balance and spatial mismatch, but there is no commonly accepted measure describing optimal accessibility to jobs.

Numerous academics have discussed the difficulty in “measuring the degree of balance or imbalance” when discussing jobs and housing (Levine 1998, 134). Livingston (1989) and Giuliano (1991) raise the issue of the Modifiable Areal Unit Problem (MAUP), common to any study using spatial units of measurement. Because the units used are arbitrary (there is no correct scale at which to study job-housing imbalances or spatial mismatch), the outcome will be influenced significantly by the scale at which the phenomenon is being examined (Levine 1998,

134). For example, when looking at a metropolitan area as a whole, jobs and housing tend to be in balance. However, looking more closely at specific municipalities, neighborhoods, or blocks can reveal significant imbalances that appear only at each specific scale (Levine 1998, 134). Keeping the arbitrariness of these concepts in mind is key when evaluating studies or the results of metrics meant to measure the balance between jobs and housing. Certain measures, like the distance between employment and a worker’s home, are abstractions of the specific conditions that exist in any metropolitan area. While the distance between a home and job might be short enough to be considered accessible, the reality might be that physical, social, or economic barriers exist that keep that job from actually being accessible to residents.

**Residential location decision-making:** There are many other factors that go into a worker’s decision-making process when he or she is looking to rent or purchase a home. While planners typically assume that given the chance, workers will choose to live near to where they work, there is little evidence to suggest that this is true (Levine 1998, 134). One factor in selecting housing is proximity to work but this proximity may be greatly affected by the type and quality of transportation options available to residents, such as reliable and affordable commuter rail, a rapid bus system, or highways with minimal traffic. However, other factors can be just as important, including the type and density of the housing and the amenities available in a community, such as the quality of the schools. In addition, many households contain more than one person in the workforce, and must consider the distance between home and each of the jobs (Levine 1998, 134).

Understanding the other aspects that influence where workers choose to live is an important part of encouraging them to live closer to where

they work. It might not be possible, or even desirable, for governments to completely erase the jobs-housing imbalance in metropolitan areas. However, they should make the greatest effort possible to create opportunities for all residents to make a choice about where they live. It is important to remember that proximity to employment opportunities is not the only thing workers are looking for in a neighborhood. Investments in infrastructure, services, and amenities can be just as important in attracting workers to live in certain communities.

**Reliance on market growth:** Although the advantage of many of the strategies listed in this section is that they have limited costs to government, the counterweight is a reliance on the residential and commercial real estate market. Inclusionary zoning or linkage fees and requirements place the responsibility of building and paying for affordable housing on private developers (although they may pass these costs on to market rate consumers). While this is an advantage to municipalities that lack the funds to make their own investments in affordable or social housing, it requires there to be growth in markets for residential or commercial development (Benson 2010, 745). In places where little to no development is occurring, these strategies will result in very few additional affordable units. It is important to keep in mind that there are a number of reasons why a housing or commercial real estate market might not be growing. Thus, governments should still nonetheless promote and produce social housing in desirable areas.

### Linking Housing to Jobs: Conclusions

Linking housing and jobs can happen in three ways: bringing jobs closer to residential areas, creating and expanding residential areas that are close to job centers, and improving transportation to better connect residential areas to job opportunities. Improving transportation is the

quickest to implement, at least for modes that do not require new physical infrastructure. However, all strategies may be needed—particularly for households with multiple workers. In Mexico this will require study of each metropolitan area and a regional approach.

It is also important to keep in mind that housing design and access to amenities will likely continue to be important determinants in housing selection and that location alone may not be enough to attract workers to a development. In addition, some areas close to jobs are unsuitable for residential communities due to factors like pollution.



## 3.4 Dealing with Abandoned Housing



### Dealing with Abandoned Housing

#### What It Is

- Abandoned housing can be considered in terms of functional, physical, and/or financial abandonment, meaning it is a complex problems with many causes.
- Policies designed to deal with abandoned housing need to address the different scales at which economic and social forces influence abandonment—from the household to the national economy.

Mexico has a growing problem with vacant and abandoned housing. According to the 2010 Census of Population and Housing, approximately 5 million houses are inhabited, which represent 14% of the total of 35.6 million houses in the country (INEGI 2010). Abandoned housing has many different causes, some of which can occur simultaneously. Generally, factors that influence housing abandonment can be found at three levels (Appel et al. 2014, 161). The first is the national or regional scale, at which macroeconomic forces interact with population movements, economic growth or decline, and the overall supply, location

Abandoned housing has effects on surrounding properties, but there are several strategies available to manage these problems. Pictured here, abandoned housing in Ciudad Yagul, Oaxaca.

*Photo: Collection of Ann Forsyth*

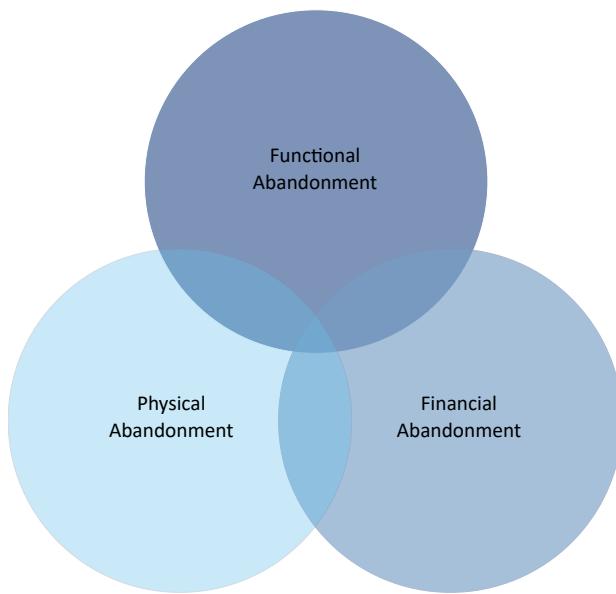
and adequacy of housing. Next are neighborhood factors, such as location within a metropolitan area, access to services and amenities, and the safety and desirability of a neighborhood (Appel et al. 2014, 161). Last, there are factors that are property specific, such as the size, layout, or quality of a housing unit, and the ability of the tenants or owner to afford to live there, all of which determine whether or not a person or household will inhabit the unit (Appel et al. 2014, 161).

In addition, there are different ways in which planners, policy makers, and researchers have defined what constitutes “abandoned.” In general, it is too simple to consider a housing unit abandoned when it is unoccupied or vacant (Wachsmuth 2008, 7). Instead, Wachsmuth (2008) suggests that abandonment should be thought of as a multidimensional process occurring over time and in different ways, not just as a state of occupancy or vacancy (Wachsmuth 2008, 8). Hillier et al. (2003) distinguishes three types of abandonment which may or may not overlap with one another: functional abandonment, physical abandonment, and financial abandonment.

- **Functional abandonment:** This occurs when a property is no longer functioning as a home (defined as a place in which one or more persons live) (Hillier et al. 2008, 93).
- **Physical abandonment:** This occurs when a property owner, either an owner occupier or a landlord, decides to stop investing in the interior and exterior upkeep of the unit or building (Hillier et al. 2008, 93). Physical abandonment is often indicated by housing code violations which may or may not be hazardous to the health and safety of residents (Hillier et al. 2008, 93).
- **Financial abandonment:** This occurs when the owner of a residential property stops making payments on taxes, utilities, or a mortgage (Hillier et al. 2008, 93).

Each of these types of abandonment are issues worth addressing, as they all can contribute to the overall decline of a neighborhood or area. The longer buildings and homes are left abandoned, the harder and more expensive it is to rehabilitate (Wachsmuth 2008, 7).

Policies designed to deal with abandoned housing need to address the different scales at which economic and social forces influence abandonment, as well as address the different aspects of abandonment. In addition, programs dealing with abandonment should not only focus on buildings that have already been abandoned. Identifying and preventing structures that are at risk of abandonment from becoming so is a much more effective way of dealing with abandonment (Hexter et al. 2008, 5).



The three types of housing abandonment.

*Adapted from Hillier et al. 2008.*

In crafting municipal, regional, or national programs to address abandonment, governments must first understand the underlying causes of abandonment that are at work in their city or region. These will almost certainly vary by location within a country, as well as by location within a metropolitan area and city. However, the causes of abandonment should guide the municipality or region in its response to the abandonment issue.

**The following strategies are ways in which municipal and regional governments have sought to address abandoned housing:**

- **Tracking and monitoring systems**
- **Housing code regulation and enforcement**
- **Government expropriation and disposition**
- **Increasing holding costs**
- **Promoting rental markets**

### 3.4.1 Tracking and Monitoring Systems

**What it is:** Tracking and monitoring systems offer municipal and regional governments a way to identify where housing is currently abandoned, where housing might become abandoned in the future, and where efforts to deal with abandonment might be focused.

**How it works:** Such systems have been used in various municipalities in the United States and the United Kingdom as a way to address the uncertainty about the scope and location of abandonment in their

jurisdictions. They work primarily by collecting and centralizing a number of indicators in a single location. Generally such information is already collected by municipalities but is not shared between agencies. Wachsmuth (2008, 22) suggests that an abandonment tracking system should, at least, contain the following indicators:

- Property tax payments
- Code violations
- Outstanding and historical work orders
- Municipal liens, utility shut-offs
- Occupancy rates
- Crime reports
- Visual deterioration (Wachsmuth 2008, 22)

In addition, this information should emphasize viewing and dissemination so that it can be shared easily with other public agencies, researchers, non-profit organizations, and the public.

**Example:** The City of Los Angeles in California, United States, is one city that has implemented such a tracking and monitoring system to great success. The system, known as the Neighborhood Knowledge Los Angeles (NKLA) system, began in 1995 as the result of a technical assistance project by the urban planning department at the University of California Los Angeles to help neighborhood groups to purchase and rehabilitate abandoned properties (Snow et al. 2003, 6). Through the project, researchers noticed a strong relationship between abandonment and tax delinquency in the neighborhoods in which they were working. The NKLA system was proposed as a more cost effective way to continue to monitor and understand the trends contributing to abandonment (Snow et al. 2003, 6). The program continued to grow and evolve, adding more data and improving its mapping capabilities, and was adopted by the city government as a way to focus its housing code inspection and enforcement activities (Snow et al. 2003, 7). As of 2003, more than 7,000 users used the system, which has always emphasized public disclosure and access, with an average hit per day of 9,000 (Snow et al. 2003, 8). Since then, the program has expanded to cover the entire state of California, hosting a variety of datasets and indicators collected and updated by numerous national, state, and local agencies.

### Tracking and monitoring systems: Implications for Mexico.

Currently, the main source Mexico has to keep track of vacant homes in the country is the INEGI census, conducted on a 10-year basis. INFONAVIT has an internal tracking system for identifying people who are falling behind with mortgages but if payments are on time, given the sheer scale of the mortgage portfolio, the institute has few ways of tracking unoccupied housing. At the municipal level, given the problems with the cadaster system, there is typically not sufficient information recorded about code violations, liens, occupancy rates, or other factors that help a municipality to be informed about the status of abandonment in their region.

#### **Takeaways:**

- Effective monitoring systems can help prevent abandonment by identifying properties at risk and intervening with owners and lenders.
- Universities and other research or policy organizations can help to jumpstart monitoring programs for housing abandonment, as they may already have the necessary technical equipment and expertise.
- Systems for monitoring abandonment benefit from data sharing and increased coordination between government agencies.

### **3.4.2 Housing Code Regulation and Enforcement**

**What it is:** Adopting housing codes that require owners to maintain the physical appearance and safety of both the interior and exterior of a building is an important way cities can work to prevent physical abandonment. It also allows the municipality to maintain the quality of housing stock while units are functionally abandoned (Hexter et al. 2008, 7).

**How it works:** Housing and building codes are established by municipalities to ensure certain safety and quality standards in housing. When housing is vacant (functionally abandoned) or on its way to becoming vacant, owners tend to neglect the upkeep necessary to maintain these standards. Failure to upkeep housing units properly can lead to a number of issues, such as tenants leaving (if it is rented), a decline in the exterior physical appearance of the building, and decreasing value of neighboring properties (Hexter et al. 2008, 7). However, by strictly enforcing building codes, municipalities can ensure that owners make the proper investments in maintenance, even if the unit is vacant. These can be difficult to enforce, especially

if a municipality is unsure where problems may exist. In addition, it is important that the fines or charges levied against a code violator be large enough to spur action such as the sale of property that an owner cannot afford to maintain (Wachsmuth 2008, 17). Fines that increase with the incidence of violations or with continuing failure to make repairs can help to deter repeat offenders, while not overly penalizing small or non-serious offenders. Funds raised through fines and charges can then be used to help owners unable to pay to bring their buildings into compliance, or to help fund other abandonment programs.

**Example:** The City of Baltimore in Maryland, United States, has long struggled to deal with the large number of vacant properties within the city. As part of its Vacants to Value (V2V) program started in 2010, the city fundamentally changed the way it enforced building codes and issued citations for violations (Vacants to Value n.d.). Under the new program, enforcement is targeted to vacant properties, with \$900 fees issued to owners if they do not respond to the city-issued citation after a certain period of time (Vacants to Value n.d.). Fines increase if no action is taken by the owner to fix the violation, encouraging owners to act as soon as possible. If the fines do not spur action, the city uses its legal authority to place the house in receivership, and auctions it to a new owner (Vacants to Value n.d.). At the start of the program, there were 1,529 vacant housing units subjected to this new enforcement technique. As of December 2014, the city had issued 1,854 citations of \$900, spurring 1,182 rehab projects, 773 receivership cases and 28 demolitions (Baltimore Housing 2014).

#### Housing code regulation and enforcement: Implications for Mexico.

Code regulation and enforcement could be particularly beneficial in areas struggling with

high rates of abandonment in order to maintain some level of security and quality of life for residents who remain. By establishing enforceable codes, municipalities might have more leverage to fine homeowners or even housing developers, thus disincentivizing irresponsible behavior, and also recuperating some of the costs of maintaining abandoned developments. In a more proactive measure, some developers in different areas in the country are also trying to promote physical appearance requirements to maintain the value of their properties.

#### Takeaways:

- Proactively dealing with maintenance problems can encourage rehabilitation and reuse.
- Structuring fines to increase with repeat offenses may improve their efficacy.
- Making financial support available to homeowners struggling with upkeep is an additional way to combine code regulation with proactive prevention strategies.

#### 3.4.3 Government Expropriation and Disposition

**What it is:** Governments need a legal method by which they can take control of abandoned properties. Once under their control, governments can sell, rehabilitate, redevelop, and/or create a bank of vacant properties.

**How it works:** Property that is abandoned can come into the possession of government in a variety of ways. One of the most common in the United States is when a property owner fails to pay the taxes levied on the property. In this case, the property is forfeited to the local government, which usually auctions off the property in an effort to recoup the outstanding tax balance owed by the previous owner and potentially foster further investment in the area. Other cases occur when, as in the previous example from Baltimore,

property owners fail to remedy violations of a local government's building code. Again, there are a variety of ways governments can use these properties once they are under their ownership. Many sell them, leaving rehabilitation work to the new owner. Others work to rehabilitate properties (often with financial help from non-profit organizations) before selling them. Much depends on the type of building on the property and its condition. In addition, government can bank the property it acquires, either combining surrounding vacant properties into larger parcels for resale or redevelopment, or waiting for the property market to improve (Mallach 2010, 109).

**Example:** The City of Cleveland and Cuyahoga County in Ohio, United States, were particularly impacted by the recession and foreclosure crisis that hit the United States and many other countries in 2007 (Keating 2013, 9). Even before the recession, abandoned housing was an issue in many so-called "rustbelt" cities in the United States, which had seen large declines in both employment and population due to manufacturing jobs leaving and populations moving into suburban communities. To deal with this issue, the state government authorized the creation of county land banks. In 2009, Cuyahoga County, which includes Cleveland, was the first to create one of these organizations.

The Cuyahoga County Land Bank is officially a non-profit organization, although five of its nine board of directors are members of the Cuyahoga and Cleveland local governments (Keating 2013, 7). Under the state enabling legislations, the Land Bank can "purchase, receive, transfer, hold, manage, dispose of and lease real property; acquire or manage unimproved (vacant) underutilized property and tax forfeited lands; contract with governments and other entities (e.g. private property owners) for land improvements; issue bonds, apply for grants, make loans, and borrow money" (Keating 2013, 7).

In its first four years of operation, the Cuyahoga County Land Bank received an average of 80-100 vacant and abandoned housing each month. Most of these dwellings were beyond repair, and the most viable option was to demolish them (Keating 2013, 10). Indeed, the majority of the houses the Land Bank takes possession of are demolished, with roughly a quarter undergoing rehabilitation and renovation (Keating 2013, 13).

## Government expropriation and disposition: Implications for Mexico.

In response to widespread housing abandonment, Mexico is already experimenting with resale of abandoned properties. New policies and reforms to INFONAVIT's internal regulations are currently awaiting approval in the Mexican Senate. These laws, if approved, will allow INFONAVIT to speed up the foreclosure process, which can now take anywhere from 6 months to 4 years. The drawback of such a policy, however, is that it does not address the failures of the current production model based on quantity rather than quality. Currently this system has caused INFONAVIT to have 5.29% non-performing loans out of the total credit portfolio (El Universal 2015). Though not a government initiative, PROVIVE in Mexico is one example of an enterprise that works to buy abandoned homes in cities across Mexico and repairs them to be sold again on the market, targeted to low-income families.

### Takeaways:

- Government expropriation and disposition may be necessary in cases where landowners fail to remedy building code violations.
- Land banking can also encourage reuse or redevelopment of vacant buildings, as governments may then aggregate and sell parcels to facilitate a larger project.
- Rundown properties are sometimes beyond repair and can present challenges for government entities, which may face no choice but demolition.

### 3.4.4 Increasing Holding Costs

**What it is:** Holding costs are the costs of owning or holding onto land. It is not uncommon for real estate speculators (those owning property and waiting for it to rise in value due to external circumstances, not via development of the land) to purchase housing in distressed neighborhoods, keeping the units vacant until the property market in the area begins to strengthen. Because property values and taxes are low, holding onto vacant properties does not represent a large cost to speculators. By increasing the costs of deliberately keeping housing vacant, governments can discourage speculation and instead encourage resale or rehabilitation of the property.

**How it works:** There are a number of ways in which government can create financial disincentives for speculation. The first is to tax vacant land and buildings at a higher rate than occupied ones. These could be

applied as tax increases, or represent a separate vacancy tax levied as, for example, a percentage of the property's value (Wachsmuth 2008, 29). Another approach is to require owners of housing that is to be vacant over a long period of time (as is common in speculation) to apply for a vacancy permit. Conditions for such a permit can require the building to be kept in a good state of repair, while also charging the owner a fee (Wachsmuth 2008, 29).

**Example:** The City of Winnipeg in Manitoba, Canada, is a municipality that has increased the holding costs for owners of vacant property. The city requires vacant houses to be well maintained and does not allow them to be boarded up, a clear sign of vacancy (Wachsmuth 2008, 29). If property owners do want to board up properties, they must apply for permits from the city that last only six months. To further discourage speculative holding, the costs of the permits increase each time an owner applies (Wachsmuth 2008, 29).

#### **Increasing holding costs: Implications for Mexico.**

While such speculation may not be as large of an issue in Mexico, Monkkonen (2014) suggests that many INFONAVIT housing units are vacant because individuals decided to purchase housing units without the intention of moving into them (Monkkonen 2014, 8). Making it more difficult for eligible buyers to take out loans from INFONAVIT probably is not desirable; however, making it more expensive for individuals to own vacant housing could be enough of an incentive to discourage individuals from buying housing they have no intention of occupying.

#### **Takeaways:**

- Taxation systems can create a financial disincentive to engage in speculation, but the penalty must be set high enough to be meaningful to the speculators.
- For holding costs to have an impact, they typically rely on an existing property tax and cadaster system.

#### **3.4.5 Promoting Rental Markets**

**What it is:** Another strategy to decrease the vacancy rate of housing is to encourage property owners to rent out their units instead of leaving them vacant. This is an especially good option for housing that is located near jobs, or in parts of the metropolitan area with good access to services and infrastructure.

**How it works:** In some countries, laws and tax policies can discourage

property owners from becoming landlords (Monkkonen 2014, 11). While laws should not strip tenant of their rights, regulations that are too protective of tenants, for example by protecting tenants who do not pay their rent, discourage property owners from renting out their property (Peppercorn and Taffin 2013, 35). Changing tax laws is another way to encourage a stronger rental market. Many countries, including the United States, include provisions in their tax code that create incentives for citizens to buy homes instead of renting. Similarly, if tax burdens for owning rental housing are too great, property owners will not become landlords, nor will investors (who drive rental markets in many countries) choose to invest in rental housing (Peppercorn and Taffin 2013, 35.) Finally, there can be general education and counseling about the process of becoming a landlord.

### Promoting rental markets: Implications for Mexico.

The rental market in Mexico is a complex mosaic that stands to benefit from an even greater range of options, as discussed in section 1.4 on Promoting Alternate Tenure. In order to properly promote rental markets, it will be necessary to review rental regulations to be fair to both landlords and tenants in order to provide more security for the rental market as a whole. INFONAVIT has a pilot project for rental market called *Arrendavit*, through which the institute rehabs foreclosure properties and puts them back on the market for rental by INFONAVIT credit holders.

#### Takeaways:

- A healthy rental market can be an important and necessary part of a metropolitan area's housing market.
- Renting a house can be a much better choice than buying a home for certain people, such as students, young people, or low-income households who may move frequently and cannot afford to pay the down payment, maintenance, and other costs associated with owning a home.
- Finding ways to promote the renting of individual units may be an important mechanism for making the housing market more flexible and encouraging the upkeep of houses, and will require regulations that support small landlords.

#### 3.4.6 Demolition

**What it is:** Sometimes demolition is the most appropriate approach to rehabilitating a property. Under this strategy, governments remove the structure that is on the property when it comes into government

ownership, replacing it with another house, or dedicating the land to another use, such as conservation.

**How it works:** There are a number of cases where it is not feasible to rehabilitate an abandoned house or larger building. Instead, it is more cost-effective to remove the abandoned structure and dispose of the property without any improvements, or with a new structure built in place of the old one. However, in circumstances where the supply of housing in a region greatly exceeds the demand for housing, it is likely that even a new structure or cleared lot will remain vacant. This situation, common to many post-industrial cities in the United States, is difficult to confront with the strategies listed in this section. The underlying cause, for the most part, is beyond the control of the local government. This is less of an issue for fast-growing cities, although housing built in certain locations within these cities may never become occupied due to its distance from jobs and services, and the lack of proper infrastructure, like sewer and water.

### Demolition: Implications for Mexico.

Given the reality that housing is abandoned in part because of poor quality construction, inaccessible location, or lack of infrastructure and services, demolition (rather than repair or recuperation) may ultimately save money in the long term, as repairing dwellings or providing infrastructure in remote areas is expensive and complex. Rather, it keeps some concentrations of residential areas potentially with town or neighborhood centers and returns areas with high rates of housing abandonment to their previous uses as agricultural land or park space.

### Takeaways:

- Demolition programs are expensive to implement, as they require a good amount of labor force and the turnover is not always

guaranteed to cover the expenses. It should be clear who is responsible for the costs of demolition, and who will get ownership of the cleared land once demolition is completed.

- Demolition is most useful in extremely weak housing markets, where it would be very expensive to provide public services, or areas where there is extensive damage to buildings.

## Benefits and Challenges of Dealing with Abandoned Units

### Benefits of Dealing with Abandoned Units

**Revitalization of distressed or declining neighborhoods:** Vacant and abandoned housing tends to have a large impact on the neighborhood and surrounding properties. Boarded up buildings, or ones that have been so neglected that they are falling down, are not signs of a healthy, vibrant neighborhood. Reinvesting in these housing units is an important way to begin to revitalize distressed or declining neighborhoods. In addition, reusing and reinvesting in existing urban areas is an important way to prevent further urban sprawl. Programs supporting the rehabilitation and renovation of vacant properties can be powerful tools to help revitalize neighborhoods, and also prevent at-risk neighborhoods from declining. Investments in housing in inner city neighborhoods can have impacts beyond the property itself, helping to improve surrounding property values. With strategic investments, governments can leverage much larger benefits.

### Challenges of Dealing with Abandoned Units

**Identifying causes of abandonment:** As discussed earlier in this section, there are many factors and processes that lead to housing being abandoned. It can be very difficult to determine

which of these affects a city or metropolitan area; however, they must be addressed if strategies to prevent abandonment are to be effective.

According to Accordino and Johnson (2000), anecdotal evidence from San Diego suggests that many homes are left vacant when a homeowner dies without a will, creating uncertainty and disagreement among family members about what to do with the house (Accordino and Johnson 2000, 312). In this case, the strategies discussed in this section would not be of much help, as the issue is a protracted family legal battle, not disinvestment, speculation, or inability to afford rental or mortgage payments. While there are legal remedies, they can be slow to implement. The causes of abandonment and vacancy will be different within each metropolitan area. While these strategies cover a range of causes, it should be the priority of planners and public officials to determine what causes are most prevalent in their jurisdiction. Normally, a variety of causes will be present.

#### **Identifying ownership of abandoned housing:**

For many of the strategies discussed in this section to work effectively, the local government has to be able to identify and make contact with the owner of the property. However, this can be extremely difficult, even in cities that have detailed ownership records. This can lead to lengthy searches and legal battles by government officials in order to gain ownership of the property. It should be a priority of local governments to create detailed property ownership records. This is not only because it makes it easier to use the strategies listed in this section, but also because it is an essential element to begin to tax property, a potentially important source of revenue for local governments. Many other strategies discussed in this report rely to some degree on registered and available property tax and ownership information.

#### **Dealing with Abandoned Housing: Implications for Mexico: Conclusions**

Housing units are abandoned for different reasons, meaning that there is no one solution to the problem of abandoned and vacant buildings. Tracking, monitoring, and predicting abandonment is a first step in trying to prevent and mitigate this phenomenon. Regulations requiring building maintenance and increased property taxes on vacant properties can reduce the negative effects that vacant properties have on the surrounding area. In some cases, governments may have to take control of abandoned properties; however, severely dilapidated parcels may be expensive or inconvenient for government entities to repurpose. Despite this challenge, addressing housing abandonment is a key policy effort in seeking to revitalize neighborhoods.



*Photo: Collection of Ann Forsyth*



# Part 4

## Increasing Data Coordination and Developing Urban Indicators

## Part 4: Increasing Data Coordination and Developing Urban Indicators

More and more cities around the world are experiencing a rapid urbanization process that calls for innovative strategies to address the social, economic, and environmental challenges that come with such accelerated development (Shen et al. 2011; Happio 2012). In order for these strategies to be successful, however, city actors must establish data management systems that promote effective decision-making and coordination. For example, to implement density and compact city policies, planning agencies need to collaborate and share information with different government departments about transport, jobs, hospitals, schools, and public space, all critical factors to ensure quality of life. Unfortunately, however, this information is often dispersed, fragmented or simply unavailable. Moreover, government agencies usually have different organizational structures, political interests and resources available, which further complicates any data coordination effort.

Similarly, the multiplicity of variables involved in urban development requires city planners to constantly develop mechanisms to measure the performance of public policies. One of the main benefits associated with urban metrics is that their implementation not only allows government officials to correct performance deviations but also to set future goals. For example, developing sustainability metrics at a national scale can help local governments to set sustainability programs that are adapted to local particularities while meeting national standards (Mascarenhas et al. 2010). Another benefit associated with the implementation of indicators is increased transparency of government activities and more efficient service delivery. These benefits, however, will only be attainable if the results and methodology for the measurements are adequately distributed for the public to review.

Even though data coordination strategies and urban indicators are fundamental for the planning and policymaking process, the success of these tools, however, might be limited if there is only a top-down approach that leaves out citizens and communities. Emerging technologies and social media can play an important role in bridging the gap between governments, citizens, and businesses to engage in the creation of more sustainable cities.

This section offers a set of tools that facilitate the design and implementation of strategies listed in the previous three chapters. In the first set of strategies, we examine the challenges of coordinating data across levels of government and explore strategies to overcome fragmentation and redundancy. The second set of strategies explores ways to develop effective urban indicators and bridge the gap between top-down and bottom-up approaches to metric development. Finally, the section concludes with recommendations on how to engage the citizens through improving data access and the use of new technologies.



## 4.1 Intergovernmental Data Coordination



### Intergovernmental Data Coordination

#### What It Is

- Data coordination strategies facilitate collaboration across government agencies to improve their performance and service-delivery.
- Multiple agencies can team up to achieve common goals by providing input from different fields of expertise.
- They expedite regulatory and permitting process to develop urban and housing projects by avoiding bureaucracy and corruption.
- Sharing data streamlines the internal work of government agencies promoting a more efficient use of resources and reducing redundancies.

Image depicts the project Primero de Mayo, in Oaxaca, Mexico, which is the result of a collaborative effort between municipal, state, and federal agencies.

*Photo: Margaret Scott*

Intergovernmental data coordination and information sharing are fundamental tools for the public administration process. Broadly, these strategies include collecting, processing, storing, and sharing information within the internal structure of a specific government area or across multiple government agencies. In addition, data coordination strategies include the operative, institutional, and legal

frameworks necessary to allow an adequate flow of information among organizations.

From an urban planning perspective, as urban areas grow, different agencies and levels of government need to work together. In this collaboration, sharing information and data becomes essential to facilitate performance and streamlined activities. In their analysis of government service delivery coordination in the state of Queensland, Australia, Keast and Brown (2010) argue that it has been increasingly recognized that governments face complex financial, social, and global challenges that can no longer be solved by a traditional “single” agency or stand alone approach. Their research showed that a collaboration system between public agencies resulted in increased efficiency in internal operations, consequently improving service provision (Keast and Brown 2010). Moreover, the results of the research highlighted that the emergence of new data management technologies opens new opportunities to facilitate this coordination and collaboration process, thus strengthening public institution capacity and performance (Keast and Brown 2010; Gilbert et al. 1996).

Despite the benefits associated with data coordination, many countries still face challenges to implement such practices. One of the most important barriers is that different sectors or functional areas of the public administration depend on the decisions taken by higher levels of government, creating “bottlenecks” that impede action (Keast and Brown 2010, 441). In other words, if higher level officials do not approve the sharing process, lower level officials are unable to share the information, even when it would be desirable for all parties. Although this may protect sensitive information, the daily activities of lower level officials may be dramatically slowed down or can become redundant. Another obstacle for sharing data is competing interests between government structures that prevent an efficient flow of information. Agencies or officials may worry that sharing information could expose them or undermine their operative independence.

Carrera and Hoyt (2007) suggest an alternative approach to overcome such barriers at the local level, where governments can take a leadership role in systematizing data collection and integration frameworks. Their research suggests that this approach would create an interaction platform between upper levels of government and smaller local entities, even getting to neighborhood or block levels (Carrera and Hoyt 2007). The authors argue that data is a valuable resource for local government and should be treated as such, acknowledging that even though this approach requires technical and financial investment,

implementing integrated information management systems not only facilitates decision making but also creates a more extensive body of urban knowledge, far outweighing the implementation costs (Carrera and Hoyt 2007, 19).

The following strategies discuss in more detail several data coordination alternatives and key related concepts:

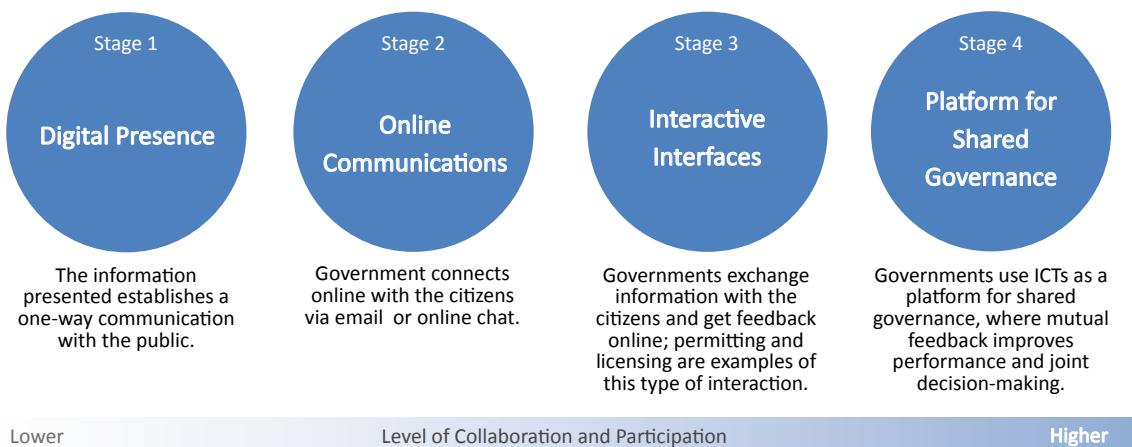
- E-government
  - Spatial data coordination

#### 4.1.1 E-government

**What it is:** E-government is a term used to describe strategies or platforms targeted at improving government performance through the use of Information and Communication Technologies or ICTs (Chun et al. 2010, 1). These strategies represent a shift from the paradigm of passive citizenry to a collaborative governance model that takes into account public input for policy making and improved service delivery (Chun et al. 2010).

**How it works:** For planning agencies and policy makers, e-government platforms can be a powerful communication tool that enables interaction and timely engagement with citizens. For example, e-government platforms can help governments to take public input into account in the design and implementation of urban projects such as parks, transport investments, or waste management facilities. Also, e-government strategies can be transformed into urban knowledge platforms and are an excellent resource for citizens to actively participate in urban issues. For instance, local governments can offer online data and the processing tools for the public to analyze

Development stages of  
e-government portals.  
*Adapted from Sandoval-Almazán  
and Gil-García 2012*



and process information that can be useful to formulate bottom up initiatives.

Generally, in early stages, e-government platforms are facilitated by an internal ICT department, and as the platforms become more complex and require more interaction with the public, the projects are outsourced to specialized companies. Some of the basic elements that make a successful e-government model are: 1) adequate use of ICTs; 2) good quality information; 3) privacy protection strategies; and 4) appropriate communication strategies with the public (Chun et al. 2010, 2-3). ICT infrastructure for e-government platforms can range from web-based applications, online platforms, videos, audios, and blogs to social media like Facebook or Twitter (Chun et al. 2010, 2).

**Example:** In Korea, the Seoul Metropolitan Government launched in 1999 a web-based portal called OPEN (Online Procedures Enhancement) to address unequal access to information and bureaucracy (Bertot et al. 2010). This online platform was part of a larger Korean government anti-corruption agenda aimed at reducing the high levels of corruption in the permitting that the country had experienced for decades. The previous regulatory system, allowed public servants to ask from citizens “express fees” to facilitate the approval process. To minimize those interactions, OPEN was developed to restrict the contact between citizens and public servants in 54 of the government services identified as more inclined to corruption. According to Bertot et al. (2010, 266) in their research about e-government strategies against corruption, OPEN was successful not only in reducing corruption but also in improving public perception about the government.

### E-government: Implications for Mexico.

In the Mexican context, e-government strategies could be an excellent way to improve communication channels to overcome barriers against progressive densification and urban development policies. Since municipalities have the constitutional right and duty to conduct urban and territorial planning, e-government strategies could clarify the often obscure urban planning system in Mexico. Sandoval-Almazán and Gil-García (2012) surveyed 108 Mexican municipalities in 2009 to analyze how local governments use websites to engage and collaborate with citizens, businesses, and non-profit organizations. The results showed that although there are efforts to transition to e-government systems, there are still opportunities for improvement. Sandoval-Almazán and Gil-García explain: “overall, the majority of the municipalities analyzed

have not implemented interaction tools, participation mechanism or collaboration applications [and] their websites function mainly as an information channel" (2012, S87).

#### **Takeaways:**

- E-government can enhance government performance by improving service delivery and promoting transparency and citizen engagement.
- A major challenge for e-government initiatives is the need for a substantial technical and organizational investment from a sponsoring agency.
- New technologies provide innovative ways to incentivize citizen participation through web-based platforms such as social media, web content, and digital applications.
- Unequal access to digital services is a major drawback of e-government strategies. If the digital divide among citizens is too great, relying solely on these strategies might result in even greater inequities.

#### **4.1.2 Spatial Data Coordination**

**What it is:** Broadly, spatial data coordination refers to organizing the representation, storing, analysis, and sharing of spatial data (Nedovic-Budic 2000). Spatial data includes information about the distribution and location of territorial and geographic elements such as: population, topography, environmental features, climate, and water resources.

**How it works:** GIS or Geographic Information Systems are one of the most frequently used platforms to capture, store, manipulate, analyze, manage, and present all types of spatial or geographical data. Since the beginning of their widespread use in the 1990s, GIS and other information systems have evolved to develop integrated spatial decision support systems (SDSS), also referred to as planning support systems (PSS) (Koomen 2008, 8). More and more, countries around the world have recognized the effectiveness of using these systems to support the urban and territorial planning process. **Table 4.1** describes the elements that are required for implementing a successful data coordination project for planning purposes.

Spatial data platforms not only inform the work of local planning agencies but also facilitate collaboration with other public entities that are directly related to urban development such as: public works, transportation, housing, social development, police, and natural resources authorities (Nedovic-Budic 2000; Breunig 2012).

**Table 4.1 Elements required for implementing a spatial data coordination system for urban planning activities**

Requirement	Purpose
<b>Database development</b>	To create a data integration platform with information from the multiple agencies that influence city development.
<b>Standardization</b>	To ensure data quality. Includes establishing common formats, data gathering protocols and developing metadata.
<b>Access to data</b>	To provide uniform access to the information created. Often, the information is presented in a variety of formats to enable multiple actors to use data according to their specific needs.
<b>Tool building and integration</b>	To provide local agencies with the required hardware and software necessary to collect, process, and present information.
<b>Education and technology transfer</b>	To coach local staff on how to use spatial analysis systems and data coordination systems.
<b>Legal framework</b>	To provide legal protection for the information created. Also, to ensure that privacy and sensitive information is protected.

Adapted from Nedovic-Budic 2000, 87-88.

**Example:** In the United States, over the past 30 years, there has been a significant progress to promoting spatial data coordination projects, both at the national and state level (Nedovic-Budic and Pinto 1999, 54). At the state level, this process has gone from fragmented and department-specific efforts to coordinated multi-agency platforms that stimulate local governments transition to GIS systems, particularly to create land inventories and GIS clearinghouses (Nedovic-Budic and Pinto 1999).

One example of such efforts is the Texas Orthoimagery Program, a state-initiated program to create common base maps (Nedovic-Budic and Pinto 1999, 54). The program, spearheaded by the Texas Natural Resources Information System (TNRIS), gathers, processes, and disseminates cartographic imagery and other geographical data with funding and support mainly from four state level agencies: the Texas Department

of Transportation, the Texas Commission on Environmental Quality, the Railroad Commission of Texas, and the Texas General Land Office (TNRIS 2015). With increasing success and recognition over the years, this example illustrates the possibilities of spatial data coordination and integration from different sources into a single platform, built for public use.

At the federal level in the U.S., the first attempt to promote spatial data distribution was initiated with the creation of the National Mapping Division Digital Cartography Program in 1979 (Nedovi-Budic and Pinto 1999). After that initial push, the most successful progress has been made in the development of national protocols for storing spatial data such as the TIGER products (Topologically Integrated Geographic Encoding and Referencing) (Nedovic-Budic 1999, 54). The TIGER database stores spatial features for all U.S. territories, such as roads, railroads, rivers,

and legal statistical geographic areas. Managed by the United States Census Bureau, the database provides publicly available information in shapefiles format, as well as an online mapping application (United States Census Bureau 2015).

### **Spatial data coordination: Implications for Mexico.**

In Mexico, metropolitan agencies and local governments have promoted initiatives to create spatial data analysis platforms, but they remain isolated examples. One of the main barriers is the unavailability of cadastral information in digital formats. Also, most municipalities have their land use information in AutoCAD formats, which are not designed to analyze dynamic layers of information. In one example, the municipality of Mérida, Yucatán, coordinated spatial information to implement an online GIS platform. The platform includes information about municipal services such as: police stations, parks, schools, markets, and government offices. The main objective of this initiative is to provide reliable sources of information to the public as well as promote government accountability.

#### **Takeaways:**

- Coordinating spatial data is fundamental for urban planners because it creates a collaboration tool to interact with relevant stakeholders and government agencies.
- Even though technical barriers are often cited as the main challenges for implementing data coordination, barriers are interorganizational and institutional.
- The visual nature of spatial information provides a foundation for community engagement in policy making and community projects. Tools such as maps, graphs, and infographics help policy makers to convey important information with the public.

## **Benefits and Challenges of Coordinating Data**

### **Benefits of Coordinating Data**

**Improves service delivery and policy making:** As cities grow, the demand for the information required to plan and provide city services in a sustainable way increases. In this sense, data coordination provides policy makers and planners with a solid foundation of knowledge about the multiple issues to be taken into account for efficient decision making. Additionally, creating interactive platforms where governments and the citizens can share information opens up opportunities to improve service delivery, government activity

monitoring, and program implementation.

In a report published by the National Australian University, Breunig (2012) highlights that one key area of opportunity to improve data collection and promote data efficiency in government activities is small scale surveying and data collection. Many agencies, in order to design their programs and policies, require data that they collect and process in an ad-hoc approach. Once the information is used for its original purpose, it is discarded. According to Breunig (2012), a good way to overcome those inefficiencies is to systematize the collection and processing method across agencies, establish an inter-agency data sharing platform, and delineate legal and privacy concerns. National Governments in Australia, Canada and the United States have started to establish national level legislation and specific programs targeted to share data across states and government agencies (Breunig 2012, 4).

**Improves transparency and government accountability:** Data coordination, e-government, and knowledge-based initiatives enable citizens to evaluate government performance and reduce opportunities for corruption. However, having a transparent system is not always a direct driver of government accountability. It is essential that the data provided is reliable and timely for citizens to be able to engage with governments to design better policies (Ubaldi 2013). One of the direct benefits of government interaction with citizens through online platforms and social media is that it simplifies important information and provides a foundation for building engagement.

**Incentivizes civic participation for the design, planning, implementation, and monitoring of programs and policies:** One of the main benefits of coordinating data is that it provides a solid foundation for civic engagement (Chun et al. 2010, 1). Government accountability and credibility rise when agencies share information about projects and initiatives and establish adequate communication channels with citizens (Chun et al. 2010; Sheridan and Tennison 2010; Breunig 2012). In turn, collaboration between the government, public sector, and other stakeholders contributes to more efficient government performance (Chun et al. 2010, 1). Creating organizational coordination helps to ensure that stakeholders across public and private sectors are taken into account in the decision making and participation process. It also provides a platform that allows many voices to be heard with appropriate mediation when conflicts arise (Gilbert et al. 1996).

## Challenges of Coordinating Data

**Organizational challenges, politics and bureaucracy:** For governments, some of the main barriers for implementing a data coordination strategy are organizational structure, politics, bureaucracy, and privacy concerns. To overcome these issues it is necessary to provide clear legal frameworks and communication channels that allow useful and integrated sharing networks that reconcile the priorities, motivations, and internal structure of the parties involved (Chun et al. 2010; Nedovic-Budic and Pinto 1999). A frequent obstacle for coordinating intersectorial or interagency efforts occurs when each entity has its own set of values and organizational structure. In such instances, establishing a clear hierarchy, common objectives, and communication strategies between the parties involved is fundamental (Keast and Brown 2010, 444).

**Technical barriers include lack of qualified staff, data protocols, and technological equipment:** The shift from an unclear and disarticulated data system to a transparent and coordinated system is not an easy task. It requires overcoming major technical and organizational challenges that represent substantial investment for the sponsoring agency, especially in the initial stages (Nedovic-Budic and Pinto 1999, 54). Several authors agree that creating partnerships to use and reuse data can help overcome data coordination barriers (Chun et al. 2010; Breunig 2012; Nedovic-Budic and Pinto 1999). For instance, to reduce collection costs and maximize data usage, data management strategies to standardize processes such as collection protocols, data formats, and storage platforms, ensures that the information created by a given agency can later be used by another partner agency (Breunig 2012; Carrera and Hoyt 2007; Sheridan and Tennison 2010).

**Insufficient political and financial support from higher levels of government:** Keast and Brown studied decentralization of data management strategies in the state of Queensland, Australia and found that having strong support from central and higher levels of government enhanced the implementation of coordinating efforts at the regional and metropolitan level (Keast and Brown 2010). Similarly, securing financial support from federal and state sources promotes credibility to secure the long-term viability of a project.

Political and financial support from higher levels of government is helpful leverage to develop a metropolitan data coordination strategy. However, it is key to define the role of each actor involved from the initial stages of the project. If clear implementation rules are not in

place, the success of any strategy is at risk (Keast and Brown 2010). For example, the Government Service Delivery Programme (GSD) to provide city services in Queensland, Australia was dismantled even after initial success because there was no clear support from federal agencies. This lack of support resulted in over-reliance on regional actors, a situation that in turn resulted in the loss of citizen participation when the local project leader was transferred to another position (Keast and Brown 2010).

### Intergovernmental Data Coordination: Conclusions

Given the complexity of urban development, urban planners and policy makers require tools that help them coordinate and collaborate with multiple actors. Even though implementing data coordination is not usually a straightforward process, the benefits associated by far outweigh the challenges involved.

Although in Mexico there are entities that disseminate data such as INEGI (National Institute of Statistics, Geography, and Information), SNIIV (National System of Housing Indicators and Information), as well as data produced by government departments, the transition to open government systems has a long way to go. To address this, in 2003 the National Institute for Information Access (IFAI) was created as a platform for the citizens to request information about government activities and debate privacy protection issues. However, the overall perception of the agency's performance remains unclear. Notably, inside federal government there is no department that ensures that the information is available for all agencies and coordinates its efficient use and distribution. Data coordination remains an opportunity area for Mexico to improve government performance, accountability, and public engagement.



## 4.2 Developing Urban Indicators



### Developing Urban Indicators

#### What It Is

- **Indicators promote transparency and accountability by facilitating the evaluation of government activities.**
- **Developing metrics and indicators helps to monitor the results of policies, projects, and programs.**
- **Development of indicators creates opportunities for civic engagement around urban issues, contributing to the democratization of the urban and territorial planning process.**

Urban indicators can track single topics such as housing production or more multifaceted issues such as sustainability or quality of life.

*Photo: Francisco Lara*

Planning and government agencies are constantly searching for better ways to monitor and evaluate their performance in order to improve their work (Bohringer and Jochem 2007, 1). Depending on the stage in the process at which indicators are measured, they can be classified as process or outcome indicators. Outcome indicators help policy makers to assess performance and define objectives (Singh et al. 2009; Happio 2012). Process indicators, on the contrary, provide performance feedback before implementation is completed in order to correct deviations. In both cases, indicators are an excellent communication

**Table 4.2 Requirements for the design of indicators**

Requirement	Description
<b>1. Definition of objectives</b>	Includes defining the audience of the project, who is in charge of developing and implementing it, and the main purpose.
<b>2. Selection of methodology</b>	Involves selecting the appropriate analysis method. For example: “qualitative/quantitative, subjective/objective, cardinal/ordinal, unidimensional/multidimensional” (Singh et al. 2009, 195).
<b>3. Definition of range and scale</b>	Defines the range and scale of the indicators. Additionally, indicators allow comparison across space (cross-section), time (time series), and relative or absolute method (Sing et al 2009, 195).
<b>4. Definition of study approach</b>	Involves defining the measurement approach of the study in terms of input (means) or output (ends) (Singh et al 2009, 195).
<b>5. Ensuring data quality</b>	Ensuring data availability and reliability is fundamental for the validity of the evaluation process (Bohringer and Jochem 2007).
<b>6. Allowing flexibility</b>	Involves defining mechanisms that allow the indicators to be adjusted, either for improvement or to foster comparison with other projects.

Adapted from Singh et al. 2009; Bohringer and Jochem 2007.

tool between governments and citizens. Metrics convey complex information to a broader audience and open up opportunities for dialogue and debate.

Indicators measure and monitor the extent to which variables meet a set criteria (Happio 2012, 168). Singh et al. (2009) add that indicators support a wide range of government initiatives and can help to evaluate conditions and trends, prevent potential challenges, innovate, communicate, and support decision-making (Sing et al. 2009, 193). Singh et al. (2009) also suggest a series of considerations that facilitate the design and implementation of indicators, presented in **Table 4.2**.

When designing an indicator framework, Turcu (2012) and Singh et al. (2009) point out that

there are two main views: a top-down or expert-led approach and a bottom-up or participatory approach. In a top-down or expert-led approach the experts and researchers design and select the appropriate variables and information to analyze. In contrast, a bottom-up or participatory approach includes different stakeholders in the design of the framework (Singh et al. 2009, 192). These opposing strategies have both pros and cons and their differences and conflicts are well-documented in literature (Turcu 2012, 700). One of the main challenges of selecting a single-sided approach is that it often complicates the communication between policymakers and end-users and vice versa (Turcu 2012, 700).

**The following sections provide detailed information about the methodological approaches for developing evaluation frameworks:**

- **Top-down or expert-led approach for developing indicators**
- **Bottom-up or participatory approach for developing indicators**
- **Bridging the gap between expert-led and bottom-up approaches**

#### **4.2.1 Top-Down or Expert-led Approach for Developing Indicators**

**What it is:** The top-down or expert-led approach is the traditional way in which governments and agencies develop an analysis framework.

Typically such formats are based on statistical information and literature that allows experts to understand the characteristics, behavior or dynamics of the subject of study.

**How it works:** Generally, the developer of the indices is in charge of the entire analytical process: from setting goals, creating methodology, gathering information, conducting analysis, and disseminating results. The subjects of analysis are passive participants of the process. Frequently the data used for top-down indicators comes from academic institutions or national census and statistic agencies. International agencies, such as the United Nations, the European Commission, and the World Bank frequently use this approach because it allows them to conduct large-scale research projects to compare indicators across countries and regions.

**Example:** In 2004, the United Nations Habitat program released the Global Urban Indicators (GUI), a set of indicators to help member countries meet the Millennium Development Goals. The GUI comprises a set of 20 indicators, 8 checklists and 16 extensive indicators that measure key elements of the Habitat Agenda in 200 cities across the world (UN Habitat 2014). The elements included in the indicators are: Shelter, Social Development and Eradication of Poverty, Environment Management, Economic Development, and Governance (UN Habitat 2014, 8). Data collection and initial processing of the information is conducted by groups of experts in the regional or country representations of UN Habitat. As an ongoing effort, these indicators have been periodically updated to measure the urban dynamics that the Habitat Agenda establishes and that facilitates decision-making for policy makers and governments across the world (UN Habitat 2014).

This approach has both pros and cons, which depend mostly on the intended use of the information. On the positive side, top-down indicators allow national governments and policy makers to establish metrics of progress and correct deviations. On the downside, this approach could be too reductionist, leaving out possibilities to understand the underlying relationships and dynamics that would be required for a successful implementation of policies and programs (Reed et al. 2001).

### **Top-down or expert-led approach for developing indices: Implications for Mexico**

One current example of a top-down or expert-led approach in Mexico is the “City Prosperity Index” developed by UN Habitat to analyze 130 cities across the country. This index is based on six “axes” of action: productivity, infrastructure, quality of life, equity, environmental sustainability, and urban governance. The results, not yet completed, will help to guide Mexican policies to meet the “City Prosperity Global Initiative” (UN-Habitat 2015). Another example of the use of a top-down approach to develop indicators in Mexico are the evaluation and auditing projects conducted by CONEVAL (the National Council on Evaluation of Social Development Policy). As the federal evaluation agency, CONEVAL measures the effectiveness of public programs and policies to reduce poverty and promote social development.

#### **Takeaways:**

- A top-down approach to developing indicators enables comparison across different cities. For national governments and international agencies this approach simplifies the comparison of indicators across different geographical spaces to standardize and set goals. The UN Habitat Global Urban Indicators are an example of this approach.

- The main criticism of this approach is that often the selection of the indicators does not take into account the concerns and opinions of the stakeholders, hindering opportunities for engagement, debate, and use of the information created in the analysis (Turcu 2012, 700).

### **4.2.2 Bottom-up or Participatory Approach for Developing Indicators**

**What it is:** A bottom-up or participatory approach for developing indicators is a shift from the traditional top-down approach. The strategy intends to measure indicators directly related to the local actors analyzed, involving them in one or all the stages of the evaluation process. Often, research agencies, universities, or non-profit associations provide technology, statistical and methodological guidance to support these initiatives.

**How it works:** The bottom-up or participatory approach “emphasizes the importance of understanding the local context in defining and prioritizing indicators and on-going learning” (Turcu 2012, 700). Particularly key for local and regional initiatives, this strategy starts the design process by setting common objectives that take into account the different perspectives of the stakeholders, especially if their input is required in the implementation phases (Shen et al. 2012; Bohringer and Jochem 2007). This guarantees not only that the participants will cooperate in the collection of the data, but also that the information generated will be useful for them after the evaluation is completed. The main challenges of this approach are data availability, technical capacity, and an adequate selection of analytic methods (Turcu 2012, 700).

**Example:** Often, participatory approaches to develop indicators are used when the successful implementation of a specific policy requires

the participation of the actors evaluated. Mascarenhas et al. (2010) documented the participatory approach they took to create a framework for sustainability indicators across the Algarve region in Portugal. The project involved workshops for scoping and surveying 16 of the region's municipalities to evaluate their sustainability practices. Participants in the workshops included local government officials, public works representatives, NGOs, business associations, chambers of commerce, union members, academics, social welfare agencies, among others (Mascarenhas et al. 2010, 647). The research showed that part of the success was the engagement of the participants in a regional agenda, which motivated them for action (Marcarenhas et al. 2010). Additionally, convening the interests, priorities, and vision of the municipalities and actors allowed them a sense of pride and ownership of the project. One of the most important research outcomes on the use of a participatory approach in developing the sustainability indicators was that "bringing together local communities within regional strategies increases their sense of ownership of regional sustainability options, which includes engagement with and an understanding of approaches to assessment" (Mascarenhas et al. 2010, 13-14).

#### **Bottom-up or participatory approach for developing indices: Implications for Mexico**

Though not directly linked to urban development issues, one recent example of a participatory approach is a monitoring and evaluation project developed by the Restoration Ecology Laboratory of the Institute of Biology at Universidad Nacional Autónoma de Mexico (UNAM), designed to help protect endemic fish species in the Xochimilco wetland, in Mexico City. The project involved the participation of local fishermen to draw on their knowledge and expertise. Taking a participatory approach was not an easy task but researchers

concluded that: "... group dynamics, local political alliances, and powerful actors turn participation into an intricate social process. Restoration practitioners who are serious about participation should bear in mind that a participatory approach may add complexity to project implementation, but the outcome may be more sustainable restoration projects" (Von Bertrab and Zambrano 2010, 343). Unfortunately this type of approach is not widespread, as Mexican government institutions often develop performance indices without community input.

#### **Takeaways:**

- A bottom-up approach to developing indicators is particularly useful when action from participants is needed.
- Taking a participatory approach is also helpful for developing tailored indicators because integrative approaches require interaction and feedback from the study subjects, thus aligning with their needs and interests.

#### **4.2.3 Bridging the Gap between Expert-led and Bottom-up Approaches**

**What it is:** Participatory and expert-led indicators can be combined to make a more robust evaluation by learning from best practices and across scales.

**How it works:** There is continued debate in academic and policy arenas about the most appropriate way of conducting assessments, especially in projects in which the ultimate goal is the project implementation (Turcu 2012; Reed 2001). There is not a defined strategy to bridge the gap between expert-led and participatory-approaches. Depending on the type of project, the aims, and resources available, there are a number of tools that can be used to integrate both systems. These integrative strategies can be classified in three main areas of focus: methodology,

**Table 4.3 Strategies to bridge the gap between expert-led and bottom-up approach**

Requirement	Description
<b>Selecting the scale of assessment</b>	Depending on the objectives of the assessment, indicators can be established in a variety of geographic scales; for example: neighborhood, city, regional, national, and international scale. In some instances, Singh and colleagues argue that at the international level, indicators can leverage action towards negotiating environmental protection strategies between countries or across regions (Singh et al. 2009, 191). On the contrary, Shen et al. (2009) argue that there is growing consensus that it is at the local level where implementation of sustainability policies is more relevant.
<b>Using comparative frameworks to learn from the best practices</b>	Using a comparative framework helps to understand the goals, drivers, context, and methodology used in similar projects, to avoid replicating errors (Shen et al. 2011). In their analysis of 9 sustainability policies in India, Mexico, Taiwan, Singapore, Hong Kong, Malaysia, Spain, and Australia, Shen et al (2011) recognized similar challenges across all cases that could have been overcome if they had used a comparative framework with best practices.
<b>Defining the roles of experts and policy-makers</b>	Making a clear definition of the role of experts (researchers, scientists) and policy makers (government, NGOs or the public) enhances the performance of the evaluation process. Understanding everybody's role, interests, and capabilities helps to make a more efficient use of resources (Turcu 2012, 701).

Adapted from Singh et al. 2009; Bohringer and Jochem 2007.

intersections between the two approaches, scale of integration, and using comparative frameworks (Turcu 2012). **Table 4.3** summarizes strategies to integrate expert-led and bottom-up approaches.

In order to bridge the gap between expert-led and bottom-up approaches to developing indicators, Turcu (2012) suggests that at least the participation of local stakeholders and citizens should be taken into account in the design stage, as these same actors will be key later on in the implementation stage. Once the indicators reflect the participants' vision, then experts and researchers can take over the processing and dissemination of the results (Turcu 2012, 700).

**Example:** Even when there are clear efforts to bridge the gap between expert and local knowledge, the results of such strategies can

be difficult to measure. The Sustainable Seattle initiative developed a set of 40 urban sustainability indicators to align efforts to meet the city's sustainability agenda (Turcu 2012). Although the methods used have been acknowledged as a successful integration model between experts and citizens, the implementation results have not yet demonstrated how the integration model worked in practice (Turcu 2012).

**Example:** Another example of indicators that bridge the gap between expert-led and bottom-up approaches is the STAR Community Rating System, a certification program for sustainable communities across the United States and Canada. The STAR system stands for "Sustainability Tools for Assessing and Rating Communities," and is geared toward local governments and communities to "identify, validate, and support

implementation of best practices to improve sustainable community conditions” (STAR Communities 2015, 7). The system considers the following key areas: Built Environment, Climate and Energy, Economy and Jobs, Education, Arts and Community, Equity and Empowerment, Health and Safety, Natural Systems, and Innovation and Process. The system has been used by a number of governments across North America, including cities such as Seattle, WA; Austin, TX; or Atlanta, GA. Although the STAR system appears to be an expert-led approach because of the technical approach to evaluating sustainability, the ratings system nonetheless incorporates significant flexibility and autonomy at the local level.

One critical feature of the STAR System is the analysis of “community level outcomes” as well as key “local actions” that contribute to those outcomes, including actions taken by organizations outside of local government (STAR Communities 2015, 12). The system also incorporates flexibility by providing a range of objectives upon which a community can be evaluated, ranging from housing affordability to community water, and including a number of simpler strategies to build toward more sustainable solutions (STAR Communities 2015, 19).

### Bridging the gap between expert-led and bottom-up approaches: Implications for Mexico

Recent efforts to create a comprehensive housing database that encompasses the types, locations, prices, and developers of housing supply and demand is one example of a hybrid between the expert-led and bottom-up approaches. The *Sistema Nacional de Información e Indicadores de Vivienda* (SNIIV) created by the *Comisión Nacional de Vivienda* (CONAVI) is a collaborative effort to make information about the Mexican housing market publically available in order to

facilitate its evaluation (CONAVI 2014). The evaluation of the accessibility and usefulness of the platform will be key for further improvement and making the process of sharing information more transparent.

### Takeaways:

- A number of strategies can be used to bridge between expert-led and bottom-up approaches to develop indicators such as: selecting the appropriate methods, building comparative frameworks, selecting the scale of assessment, and defining the points of convergence in the interest of experts and citizens (Turcu 2012).
- Literature often recommends using a bottom-up approach to develop indicators when the objective of the assessment is project implementation.

## Benefits and Challenges of Developing Urban Indicators

### Benefits of Developing Urban Indicators

**Improved project performance:** Indicators set performance criteria for plans, policies, and programs. They also help identify deviations from goals, areas for improvement, and weaknesses in the process. Creating indicators that monitor and evaluate outcomes and processes is vital for improving performance. However, while many evaluation tools focus on the final outcomes of the projects, it is very important to build a flexible framework to evaluate the project in its different stages.

### Enhanced coordination and comparison

**across scales:** Creating indicators that compare performance across scales promotes coordination and negotiation for establishing common projects. In regional and metropolitan contexts this becomes particularly relevant because multiple actors at different scales of operations

need to meet an integrated criteria. As Happio (2012, 167) highlights, “assessment enables the comparison of municipalities and urban areas, and notably supports decision making processes.” Even though comparison across scales is very useful to build common criteria and to reinforce interaction between stakeholders, the process can be challenging (Happio 2012, 167). For example, in the case of sustainability indicators, the metrics used by each of the actors involved depends on their specific perspective. Thus, consolidating all points of view into a single platform becomes complicated (Happio 2012, 169).

In setting up a framework to build a regional sustainability agenda in the Algarve region in Portugal, Mascarenhas et al. (2012) surveyed 16 municipalities to identify their sustainability efforts. They discovered that there were a variety of scattered actions towards sustainability goals. While some municipalities had clear agendas, others had only initial ideas. The outcome, beyond achieving the goal of creating a regional framework for sustainability initiatives, was improved participation and engagement. The process of sharing each municipality’s objectives and concerns towards sustainability allowed them to understand their role in advancing regional efforts.

**Evaluation targeted to prompt action:** Kingsley (1998), when describing his experience working with the Neighborhood National Indicators Partnership (NNIP) on community projects, highlights the importance of establishing metrics not only to monitor trends but to facilitate change. Even though this idea may seem evident, it is common that assessment projects are only developed in order to measure rather than promote project implementation (Kingsley 1998, 6). The NNIP in Cleveland started to work with data about recipients of the Aid to Families with Dependent Children (AFDC) program to analyze if these families were going to be affected

by welfare reforms. Using data from the AFDC, the results showed that the most affected people lived in the peripheral areas of the city and that transportation for them was critical to reduce the impacts of the welfare reform. Although the results of the analysis were not surprising, the graphic visualization of the results that showed people affected were already living in underserviced areas received attention from the media, the community, and policy makers. This prompted the city and other actors to develop a series of programs targeted at helping the recipients of the AFDC (Kingsley 1998). This is an example that shows the importance of developing indicators to prompt local action.

### Challenges of Developing Urban Indicators

**Inadequate selection of indicators:** In their analysis of sustainability indicators, Singh et al. (2009) and Boringher and Jochem (2007) highlight that an adequate selection of indicators is key for ensuring the success of the monitoring process. This selection involves several requirements such as having clear objectives, data availability, and a consistent methodological approach. However, the authors conclude that the main reason behind an inadequate selection of indicators is the ambiguous conceptual definition of the term “sustainability.” Selecting the most applicable indicators and clearly defining the central goals and ideas behind a monitoring process is basic to getting the most out of the assessment project, reducing efforts and creating synergy among participants. **Table 4.4** provides basic criteria for choosing the most suitable indicators.

**Inadequate scientific methods to perform analysis:** As previously mentioned in the introduction of this chapter, Bohringer and Jochem (2007) conducted an analysis of international sustainability indices frequently used by policy makers in which they tested the

**Table 4.4 Basic requirements for selecting indicators**

Requirements
1. Define needs of scales of application
2. Create a short list of indicators, flexible for later revisions and adding
3. Identify instruments and resources to conduct the assessment
4. Recognize the capacity and training required to design, evaluate, implement, and monitor indicators
5. Establish a frequency analysis to allow comparison over time

Based on Mascarenhas et al. 2010; L.-Y. Shen et al. 2011.

**Table 4.5 Basic scientific methods required for developing indicators**

Method	Description
<b>Normalization</b>	Normalization refers to process applied to single variables to make them comparable.
<b>Weighting</b>	Specifies the correct interrelationships between indicators. For example, if one indicator is more important than the other; this has to be reflected in the aggregation by assigning to the former a larger weight than to the latter.
<b>Aggregation</b>	Aggregation refers to the functional relationships by which the data is processed. For example, an arithmetic mean, median, or mode.

Based on Bohringer and Jochem 2007.

indices' ability to meet basic scientific methods of aggregation, normalization, and weighting. They discovered not only that most of the indices did not pass the test but also that adjusting and revising the methodology could easily reverse this condition. Although international indices are frequently used for policy making, the methodology for processing information in those indices is not often scientifically adequate (Bohringer and Jochem 2007). Several authors agree that, even though it is often an overlooked issue, it is important to critically analyze the criteria and methodologies used in the development of internationally known indices (Bohringer and Jochem 2007; Shen et al. 2011). This is especially relevant for policy makers that base their programs on the results of such indices and trust the agencies that develop

them. According to the testing framework created by Bohringer and Jochem (2007), the scientific methods described in **Table 4.5** should be well-used in creating meaningful indicators.

**Data availability:** Data is a basic component of the evaluation process. The availability and accuracy of information is critical to create useful indicators. Moreover, having data available across time and at different scales strengthens the ongoing evaluation process, facilitating comparative analysis (Singh et al. 2009). Often, indicators are developed to match available data rather than to measure what is really important. Although literature about urban sustainability indicators mentions the importance of data (Singh et al. 2009; Kingsley 1998) most of the argument centers on the selection of the indicators and the

scientific methods to process the information, rather than raising the importance of the availability, quality, and accessibility of data, all of which are essential to the validity of the assessment project.

### Developing Urban Indicators: Conclusions

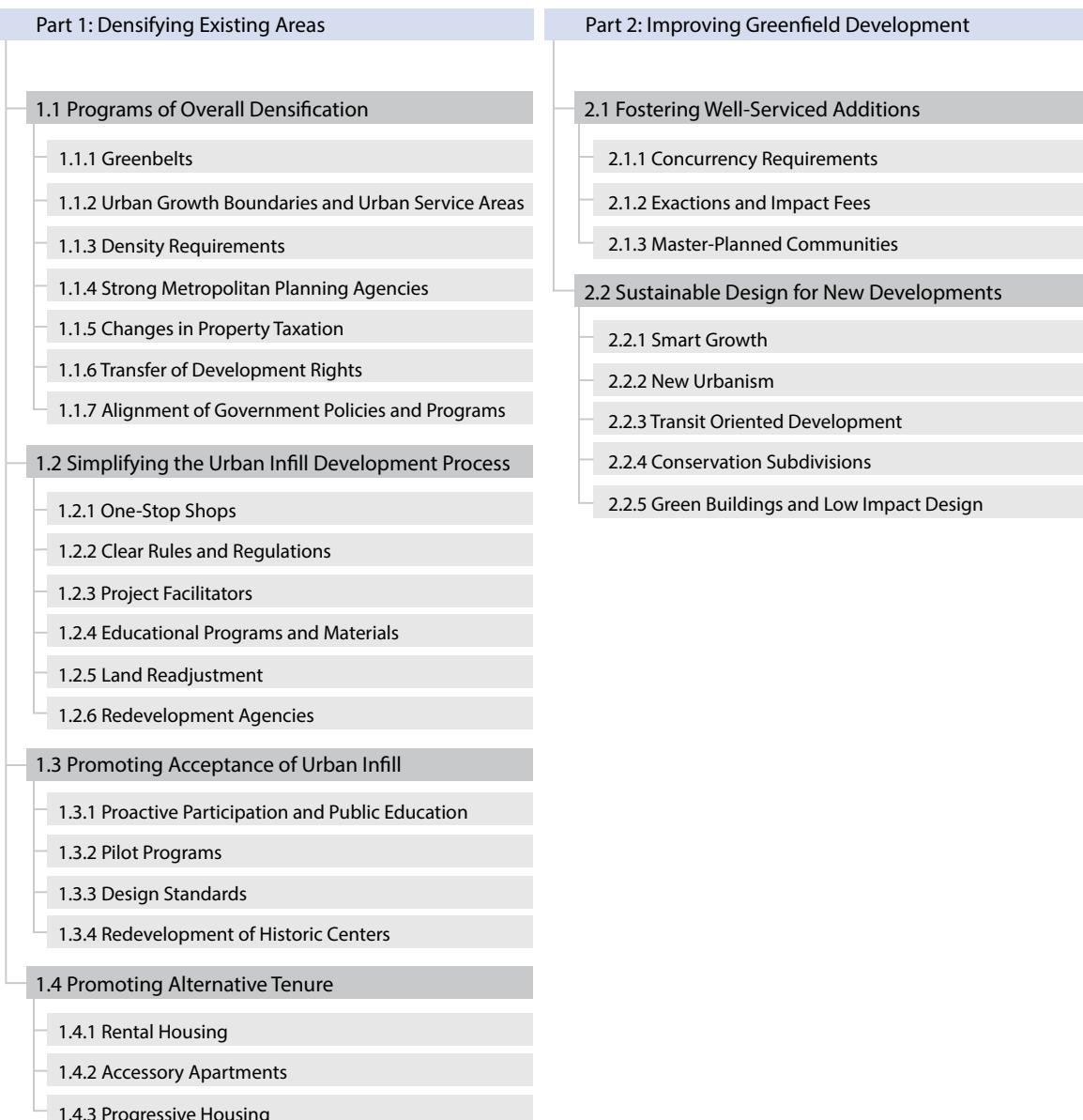
Developing indicators to monitor and assess urban issues provides an excellent opportunity to promote sustainable urban development. On the one hand, for the government, developing indicators helps to identify priority areas of action and facilitates decision making. On the other hand, developing urban metrics gives the public an opportunity to participate in the improvement of their neighborhoods and cities. Accurate and timely information provides a powerful tool to demand effective service provision, sustainable programming, and engagement opportunities. However, even though this process is desirable, the suitability and effectiveness of evaluation systems depends on the motivations of the developers, the quality of data, an adequate selection of analysis methods, and communication strategies. To address these issues researchers argue that public input is vital, especially in the design and scoping stages. If the targeted audience is taken into account, the likelihood of a successful outcome is greatly improved.



Photo: Nelida Escobedo

# Appendices



**Figure 2. Organization of the report**

<b>Part 3: Retrofitting Places</b>		<b>Part 4: Increasing Data Coordination and Improving Urban Indicators</b>
<b>3.1 Financing Upgrades to Services and Infrastructure</b>		
3.1.1 Value Capture		4.1 Intergovernmental Data Coordination
3.1.2 Tax Increment Financing		4.1.1 E-government
3.1.3 Betterment Contributions		4.1.2 Spatial Data Coordination
3.1.4 Land Leasing		<b>4.2 Developing Urban Indicators</b>
3.1.5 National, State, or Regional Grants		4.2.1 Top-Down or Expert-Led Approach for Developing Indicators
<b>3.2 Creating Neighborhood and Town Centers</b>		4.2.2 Bottom-Up or Participatory Approach for Developing Indicators
3.2.1 Strategic Location		4.2.3 Bridging the Gap Between Expert-Led and Bottom-Up Approaches
3.2.2 Accessibility Beyond the Car		
3.2.3 Urban Design		
3.2.4 Compatible Land Uses		
3.2.5 Community Programming		
3.2.6 Public-Private Partnerships		
3.2.7 Public Engagement/Involvement		
<b>3.3 Linking Housing to Jobs</b>		<b>Appendix A: Checklist of Takeaways</b>
3.3.1 Inclusionary Zoning		<b>Appendix B: Density Definitions</b>
3.3.2 Commercial Linkage		<b>Appendix C: Sustainability Definitions</b>
3.3.3 Tax-Base Sharing		<b>Appendix D: Case Studies</b>
3.3.4 Financial Incentives for workers or Municipalities		<b>Appendix E: Data: Retrofit and Densification Physical Strategies</b>
3.3.5 Financial Incentives to Hire Local Workers		<b>Appendix F: Data: Territorial Reserves Preliminary Assessment</b>
<b>3.4 Dealing with Abandoned Housing</b>		<b>Appendix G: International Urban Sustainability Indicators</b>
3.4.1 Tracking and Monitoring Systems		<b>Notes</b>
3.4.2 Housing Code Regulation and Improvement		
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3.4.6 Demolition		<b>References</b>



# Appendix A

## Checklist of Takeaways

### Part 1: Densifying Existing Areas

#### 1.1 Programs of Overall Metropolitan Densification

##### 1.1.1 Greenbelts:

- Greenbelts are a viable strategy for growth control but must be combined with adequate policies, primarily by providing land for development within the area surrounded by the greenbelt and restricting leapfrog development or channeling it into well-serviced growth centers.
- Without proper policy alignment, greenbelts will only exacerbate sprawl and increases in housing prices.
- Greenbelt strategies typically require regional or state-level government to coordinate multiple municipalities.

##### 1.1.2 Urban Growth Boundaries and Urban Service Areas:

- UGBs and USAs allow a city or metropolitan area more flexibility in guiding development than greenbelts, as well as preventing the creation of satellite towns or cities outside of the boundary.
- While some housing development inside an urban growth boundary can be lower density to keep housing costs down, some areas typically must be developed at higher densities (though not necessarily high rise). Housing configurations within UGBs might include small detached houses, row or townhouses, or low-rise apartments.
- By linking development with infrastructure provision, urban service areas ensure that providing infrastructure and services happens at a pace the responsible government can sustain financially, instead of obliging government to provide infrastructure at the rate that development occurs.

##### 1.1.3 Density Requirements

- Both maximum and minimum density requirements can be used to structure urban space.

- Density requirements are greatly strengthened when coordinated with infrastructure plans, especially those dealing with transportation in order to ensure that new development is adequately serviced (Dodson 2010, 488).
- Increasing density around current or future public transit stations (known as transit-oriented development) or activity/town centers are common strategies to channel density.

#### 1.1.4 Strong Metropolitan Planning Agencies

- Although challenging to manage, metropolitan planning can allow for greater coordination and equity in planning processes and outcomes.
- Metropolitan planning agencies can offer much-needed resources for smaller cities or municipalities who do not have the technical or financial capacity to conduct urban planning independently.
- The frameworks for metropolitan planning agencies can be complicated to put in place legally but financial incentives from higher levels of government can help to encourage their creation. For example, to receive federal transportation funding, U.S. metropolitan areas need to form a metropolitan planning organization (MPO) that conducts regional transportation planning.

#### 1.1.5 Changes in Property Taxation

- Differentiation in the level of property tax for underused or vacant properties is a mechanism that can help governments to encourage development in targeted locations.
- As with many density strategies, differential property taxes rely heavily on a robust

property taxation and cadaster or property registration system.

#### 1.1.6 Transfer of Development Rights

- TDR policies allow an overall level of development (number of units or area of building) to be achieved within a designated area.
- The main problem is ensuring that the “receiving areas” have capacity to take the additional development, e.g. adequate infrastructure and neighbors amenable to such development.
- Good design that is sensitive to the context can help solve some of these issues.

#### 1.1.7 Alignment of Government Policies and Programs

- Aligning policies can help to reduce unintended consequences and allow for more coordinated and effective leveraging of government resources.
- This alignment presents political challenges, as different policies often reflect the needs of different constituencies and the priorities of various government entities.
- National governments can foster alignment by making it a condition for funding.

### 1.2 Simplifying the Urban Infill Development Process

#### 1.2.1 One-Stop Shops

- By shortening approval processes, one-stop shops can save time and costs for developers and governments alike.
- In doing so, one-stop shops can reduce development risk, thereby increasing the attractiveness of infill development, which tend to be more complex from a regulatory perspective.

- One-stop shops must be carefully regulated to ensure that they create a more equitable process for all developers, rather than continuing to favor certain influential actors.

### 1.2.2 Clear Rules and Regulations

- Clear rules and regulation reduce uncertainty for developers and investors and thus increase the attractiveness of development opportunities, including infill and densification.
- Other active stakeholders, like community groups, may also benefit from having a clearer sense of likely development outcomes to help guide priorities and community goals.

### 1.2.3 Project Facilitators

- Employing project facilitators provides a flexible approach to expediting development and encourages a strengthened relationship between the public and private sector.
- Governments need to deploy strategies to mitigate corruption while providing improved and more efficient interaction with users.
- A public project facilitator should be able to give all developers equal access, potentially opening up opportunities for smaller, local developers.

### 1.2.4 Educational Programs and Materials

- One barrier to infill development is the availability of educational resources and technical information. Providing clear and structured information to developers can help reduce development time lags. Even developers who are familiar with local development processes may benefit from regular updates concerning any changes in regulations.

- Educational programs and materials can be combined or aligned with other efforts, such as the initiation of a one-stop shop, changes to zoning regulations, or the creation of a municipal website to share data.

### 1.2.5 Land Readjustment

- Land readjustment can provide a mechanism for overcoming the barriers of land fragmentation in order to coordinate the development of additional infrastructure and buildings.
- It is important to pair the preparation of formal urban plans with land readjustment in order to achieve desirable planning outcomes.
- Because of the number of landowners and actors involved, readjustment can be a highly challenging process to coordinate.
- Land readjustment relies on a strong land registration system.

### 1.2.6 Redevelopment Agencies

- Redevelopment agencies offer a flexible model for bridging between a local government agenda and private sector investment through public private partnerships.
- Because of this flexible model, the approaches of redevelopment agencies and their dedication to community engagement vary substantially.
- Across the United States, local redevelopment agencies function in vastly different circumstances and with varying missions and levels of power. Recent federal programs (through the Neighborhood Revitalization Initiative) have attempted to support and guide the work of local redevelopment agencies.

## 1.3 Promoting Acceptance of Urban Infill

### 1.3.1 Proactive Participation and Public Education

- At a minimum, highly interactive and visual community exercises can help to clarify complex development ideas in order to facilitate meaningful engagement. This proactive participation approach can raise awareness among residents about why development is taking a particular form and the expected benefits and risks.
- Proactive participation can also provide developers with a clearer understanding of local expectations and enable them to provide acceptable solutions.
- Current marketing techniques promoted by developers do very little to adequately address the true advantages and disadvantages of new developments in peripheral areas.
- Blogs, magazines, and other media that feature apartment, city, or high density life-styles can be an effective and informal way to market densification. Awareness can also be raised through conferences or major events organized by universities, research organizations, or major housing agencies about the benefits of and strategies for sustainable urban infill and densification.

### 1.3.2 Pilot Programs

- Pilot programs can allow government agencies and organizations to “kick the tires” before launching a large-scale program, thus reducing unnecessary spending or risk.
- Pilots can increase the likelihood of overall acceptance, as there is opportunity to assuage the fears of skeptical community members and to make improvements to performance and adjust policies to reflect community

concerns.

### 1.3.3 Design Standards

- Design standards can help to promote new developments that are in keeping with existing community character. Since such standards lead to more predictable design, they can help to reduce resident resistance and encourage greater integration of new developments.
- Care should be taken that the imposition of design standards does not excessively increase costs and are not used as an excuse to stifle infill development through unnecessarily strict regulation.

### 1.3.4 Redevelopment of Historic Centers

- Historic downtown revitalization is challenged by limited government resources, as well as coordination, corruption, and lack of code enforcement.
- Emphasizing code enforcement and creating a clear framework that explicitly considers which target groups will be served through residential development can help to guide the redevelopment of historic downtowns.
- Partnerships and alliances with local institutions are key to successfully integrating housing projects within historic centers. These partnerships, with knowledge and expertise from local actors, can help facilitate integration during the rehabilitation process, which ranges from undertaking property inventories and social integration strategies, to financing for participatory design.

## 1.4 Promoting Alternative Tenure

### 1.4.1 Rental Housing

- Rental housing must confront the general tendency and policy bias toward

homeownership in many markets, whether for reasons of availability, cultural custom, density limitations, etc.

- Rental housing is often made possible through partnerships by the public and private sectors.
- Regulatory reform is often necessary to enable the construction and incentivizing of rental housing.

#### 1.4.2 Accessory Apartments

- Accessory apartments can provide an option for incremental densification, particularly in areas where more intensive forms of infill development are not possible.
- Zoning and other building regulations in most areas with high rates of owner occupancy and residential lots with single structures prohibit the construction of accessory apartments, regardless of whether the unit is detached or a part of the primary dwelling. Allowing the legal, as-of-right construction of these units is an important first-step in promoting accessory apartments.
- Given that construction of accessory apartments is initiated not by developers but instead by homeowners who may not have any construction or rental management experience, challenges may arise. Negative externalities may include a loss of privacy, parking complications, or other undesirable outcomes. In addition, in areas with substantial infill potential, such modest densification may delay more intensive development.
- Technical assistance can foster better development.

#### 1.4.3 Progressive Housing

- For formal progressive housing to be widely adopted, it is important that residents

feel that they have secure land tenure. An essential consideration is figuring out how to reach the groups targeted by progressive housing initiatives.

- Locating progressive housing projects on the urban periphery may take advantage of lower land prices in these areas but may lead to high infrastructure costs.
- To promote densification, it is important that buildings be properly designed so that additions can be safely made and separate units can be independently and affordably added over time.

### Part 2: Improving Greenfield Development

#### 2.1 Fostering Well-Serviced Additions

##### 2.1.1 Concurrency Requirements

- Concurrency requirements can help ensure new development is well-served by infrastructure and services and bolster the amount of control governments can exert over the location of new development.
- Governments need to have a clear way of funding the infrastructure to which developments will be directed; otherwise development backlogs will result, or potential developers or investors will be deterred.

##### 2.1.2 Exactions and Impact Fees

- Exactions and impact fees are important to reducing the expenses of new infrastructure and service provision for local governments, thus making them more willing to accept new development.
- Exactions and impact fees will typically lower longer-term costs to government, who otherwise would have needed to provide the infrastructure themselves. This savings may eventually be passed on to residents in the

form of lower taxes.

- When fees are too great, they can act as a deterrent to development. Fees may also raise housing costs at the point of purchase, as developers pass on the additional expenses to homebuyers and renters.
- Determining the levels of exactions and impact fees that sufficiently maintain infrastructure quality without substantially discouraging future development or inflating housing prices is a key area of consideration for government entities. Adjustments in the fee policy will need to be made over time.

### 2.1.3 Master-Planned Communities

- Comprehensively planned developments that incorporate multiple uses can provide environments where people can conduct most of their daily activities within the developments, while also linking to a wider municipality.
- Differences exist among the types of master-planned communities, with comprehensive, new town style developments and smaller and simpler master planned communities that may not provide a full complement of uses. Although “new towns” are more difficult to develop, they can have more social benefits.
- Many precedents of master-planned communities incorporate social or environmental goals, like minimal environmental impact.

## 2.2 Sustainable Design for New Developments

### 2.2.1 Smart Growth

- Smart growth is an umbrella term for a variety of strategies to intensify development while preserving open space and creating an

inviting public realm.

- Smart growth frameworks are a useful resource from which local governments can improve their strategies for greenfield development and densification policies.

### 2.2.2 New Urbanism

- New urbanism was developed to emulate the urban forms found in 19th and early 20th century United States and traditional urban forms in Europe.
- Given this specificity of this form, the applicability to other countries and cities should be carefully considered.
- Form-based codes are one innovative approach to development regulation that new urbanists have advocated but that do not necessarily need to be “new urbanist” in design. The overall aim is to regulate the type and design of building rather than the uses.

### 2.2.3 Transit-Oriented Development

- TOD can help support transit services, reduce dependence on private automobiles, and provide greater accessibility to jobs, services, and housing options.
- Planning efforts must be better aligned with transportation plans in order to designate housing investment in strategic areas, a task that could logically be led by municipal or metropolitan planning authorities. Transit agencies can also play a key role in helping to coordinate transit-oriented development.

### 2.2.4 Conservation Subdivisions

- Conservation subdivisions can preserve ecologically and culturally valuable land while allowing for increased development and a variety of housing in designated areas.
- On the other hand, their typically low

densities may mean that residents will face long travel times.

### 2.2.5 Green Buildings and Low-impact Design

- Green building and green infrastructure approaches can be combined with strategies that specifically incorporate social and economic goals in order to produce a more fully “sustainable” project.
- While household scale green building strategies can have important cost savings for families, green infrastructure deserves particular attention to assure that water and sewage is properly and sustainably managed.

## Part 3: Retrofitting Places

### 3.1 Financing Upgrades to Services and Infrastructure

#### 3.1.1 Value Capture

- Value capture is an appealing strategy for local governments, as it helps ensure that public sector investments receive some return.
- However, value capture can be unpopular with landowners, as they may feel that they are being unfairly charged before improvements have been made or benefits realized.
- In creating and implementing value capture mechanisms, consideration needs to be given to which increases in value are being captured (land value, property value, or some other kind of value), and which beneficiaries have to pay.

#### 3.1.2 Tax Increment Financing

- TIFs are a powerful tool for funding investments that are concentrated in a specific area.

- TIFs rely heavily on an existing and reliable property taxation and cadaster system, so that property values can be properly assessed. This may prove to be a significant challenge for local governments that do not have a cadaster system in place.

#### 3.1.3 Betterment Contributions

- Betterment contributions allow municipalities to recoup payment for infrastructure upgrades from the beneficiaries of those upgrades.
- Unlike TIFs or value capture, these payments are not contingent upon increases in property value or other measurable values.
- Betterment contributions allow for property owners to pay the contribution over time, although for lower-income taxpayers, even this may be a burden.
- A key component (and challenge) of implementing betterment contributions is determining the area of influence for an investment and which beneficiaries need to pay.

#### 3.1.4 Land Leasing

- Long-term ownership of land can benefit municipal governments in that revenues from leasing to private entities can be an alternative way of funding infrastructure. This is particularly important for municipalities with few other financial resources.
- Land leasing also enables governments to maintain some control over the eventual development.

#### 3.1.5 National, State, or Regional Grants

- Grants can be a way of promoting higher-level policy objectives while also meeting local-level planning goals.

- This is particularly effective in countries where planning and development authority is decentralized to the local level. Grants are thus a key tool for incentivizing local authorities to align with higher-level government policy priorities.

## 3.2. Creating Neighborhood and Town Centers

### 3.2.1 Strategic Location

- When creating new town and neighborhood centers in existing suburbs, location is a tradeoff between a well-serviced and accessible location and available underused land.
- It is important that new centers be placed in areas easily accessible through a variety of transport modes.
- In some places, former shopping centers that were developed at low densities provide good locations for redevelopment and strategic densification.

### 3.2.2 Accessibility Beyond the Car

- Accessibility is a critical component to effective town centers. Town centers should be pedestrian-oriented and accessible via a variety of transportation modes.
- Transit accessibility goes hand in hand with higher density developments (such as through town centers), as the financial viability of public transit options typically increases with higher densities.

### 3.2.3 Urban Design

- Urban design considerations contribute significantly to the integration and quality of life of new or developed areas.
- By carefully designing new downtown or neighborhood centers near transportation

nodes and integrating human-scale buildings, public spaces, road networks, and other amenities, planners and designers can help to create functional and attractive environments that provide high quality of life and promote sustainability.

### 3.2.4 Compatible Land Uses

- Land use should be carefully considered to ensure compatibility for developing neighborhood and town centers. Thoughtful land use decision-making is greatly supported through community engagement and participatory strategies that seek community input on proposals.
- In land use planning, the limitations of the local market should not be underestimated. Chronically vacant commercial and office space in a town center or neighborhood center can be just as harmful to the vibrancy of a place as strip malls or big boxes.

### 3.2.5 Community Programming

- Effective programming of public space can be key to attracting residents and visitors to a town center.
- When combined appropriately with urban design strategies, programming can allow multiple users to make the most of a public park or open space.

### 3.2.6 Public-Private Partnerships

- Public-private partnerships are a model through which a number of the strategies outlined here can be achieved (value capture, tax increment financing, etc.)
- The more ambitious or complicated the project undertaken by the PPP, the more likely it is to run into problems and the higher the development risk.
- In jurisdictions with little experience with

PPPs, it is best to take on simple, smaller projects first.

### **3.2.7 Public Engagement/Involvement**

- Public engagement during stages of the planning process can increase local acceptance of a town center development.
- Community participation helps to ensure that the development is oriented toward the desires and needs of residents.
- Engagement is important not only to the appeal for residents but also for the financial success and vibrancy of the town center.

## **3.3 Linking Housing to Jobs**

### **3.3.1 Inclusionary Zoning**

- Inclusionary zoning is a planning tool that promotes the creation of new affordable units to enable people to afford to live in or near the communities where they work.
- Depending on the agreement, affordable units can be located on- or off-site, allowing flexibility for both the municipality and the developer to determine the best outcome.
- If perpetual affordability restrictions are not put into place, the social benefits of inclusionary zoning may be minimal if units quickly revert to market rate rents or sales prices.
- If improperly formulated or implemented, inclusionary zoning strategies can discourage new development by reducing the financial returns of projects. A good strategy to incentivize developers is through negotiations with government agencies and community organizations based on site-specific variables.

### **3.3.2 Commercial Linkage**

- Commercial linkage involves working with corporations and commercial developers to create nearby housing, balancing commercial and residential development, typically through fees imposed on developers.
- Linkage may be challenging to implement in a less competitive market, where developers may already be reluctant to invest and municipalities are more interested in offering development incentives than fees.

### **3.3.3 Tax-Base Sharing**

- Tax-base sharing can reduce the incentives for individual municipalities to promote one or two kinds of development—those that are most financially advantageous—at the expense of a regional balance.
- Countries where most taxes are collected at the state, provincial, or national level can achieve a similar result if they prioritize such redistributions.
- This mechanism is one that would be aptly implemented by a metropolitan planning agency or authority.

### **3.3.4 Financial Incentives for Workers or Municipalities**

- Financial incentives for workers to live near housing work best when such housing is indeed available.
- This strategy may not apply for all household members when income earners have jobs in different locations.
- Incentives for employers to provide housing near employment increase the choices of those who are able to move closer to their work places.
- These programs can be designed to

contribute to other social and development goals, such as promoting construction of affordable housing and infill development.

### 3.3.5 Financial Incentives to Hire Local Workers

- Job training and financial incentives for employers require collaboration between employers, workers, and local governments.
- Employment training and incentives can help match workers with local jobs, better equipping residents to find work close to their home or accessible via public transportation.

## 3.4 Dealing with Abandoned Housing

### 3.4.1 Tracking and Monitoring Systems

- Effective monitoring systems can help prevent abandonment by identifying properties at risk and intervening with owners and lenders.
- Universities and other research or policy organizations can help to jumpstart monitoring programs for housing abandonment, as they may already have the necessary technical equipment and expertise.
- Systems for monitoring abandonment benefit from data sharing and increased coordination between government agencies.

### 3.4.2 Housing Code Regulation and Enforcement

- Proactively dealing with maintenance problems can encourage rehabilitation and re-use.
- Structuring fines to increase with repeat offenses may improve their efficacy.
- Making financial support available to homeowners struggling with upkeep is an additional way to combine code regulation with proactive prevention strategies.

### 3.4.3 Government Expropriation and Disposition

- Government expropriation and disposition may be necessary in cases where landowners fail to remedy building code violations.
- Land banking can also encourage reuse or redevelopment of vacant buildings, as governments may then aggregate and sell parcels to facilitate a larger project.
- Rundown properties are sometimes beyond repair and can present challenges for government entities, which may face no choice but demolition.

### 3.4.4 Increasing Holding Costs

- Taxation systems can create a financial disincentive to engage in speculation, but the penalty must be set high enough to be meaningful to the speculators.
- For holding costs to have an impact, they typically rely on an existing property tax and cadaster system.

### 3.4.5 Promoting Rental Markets

- A healthy rental market can be an important and necessary part of a metropolitan area's housing market.
- Renting a house can be a much better choice than buying a home for certain people, such as students, young people, or low-income households who may move frequently and cannot afford to pay the down payment, maintenance, and other costs associated with owning a home.
- Finding ways to promote the renting of individual units may be an important mechanism for making the housing market more flexible and encouraging the upkeep of houses, and will require regulations that support small landlords.

### 3.4.6 Demolition

- Demolition programs are expensive to implement, as they require a good amount of labor force and the turnover is not always guaranteed to cover the expenses. It should be clear who is responsible for the costs of demolition, and who will get ownership of the cleared land once demolition is completed.
- Demolition is most useful in extremely weak housing markets, areas that would be very expensive to provide public services to, or areas where there is extensive damage to buildings.

## Part 4: Increasing Data Coordination and Developing Urban Indicators

### 4.1 Intergovernmental Data Coordination

#### 4.1.1 E-government

- E-government has a number of advantages that enhance government performance as it improves service-delivery and promotes transparency and citizen engagement.
- A major challenge for e-government initiatives is that they usually require a substantial technical and organizational investment from the sponsoring agency.
- New technologies provide innovative ways to incentivize citizen participation through web-based platforms such as social media, web content, and digital applications.
- Unequal access to digital services across the population is a major drawback of e-government strategies. If the digital divide among citizens is too big, solely relying on these strategies might result in even greater segregation.

#### 4.1.2 Spatial Data Coordination

- Coordinating spatial data is fundamental for urban planners because it creates a collaboration tool to interact with relevant stakeholders and government agencies.
- Even though technical barriers are often cited as the main challenges for implementing spatial coordination effort, the main barriers remain interorganizational aspects and human relationships problems.
- The visual nature of spatial information provides a foundation for community engagement in policymaking and community projects. Tools such as maps, graphs, and infographics help policymakers to convey important information with the larger public.

### 4.2 Developing Urban Indicators

#### 4.2.1 Top-Down or Expert-led Approach for Developing Indicators

- A top-down approach to developing indicators enables comparison across different cities. For national governments and international agencies this approach simplifies the comparison of indicators across different geographical spaces to standardize and set goals. The UN Habitat Global Urban Indicators are an example of this approach.
- The main criticism of this approach is that often the selection of the indicators does not take into account the concerns and opinions of the stakeholders, hindering opportunities for engagement, debate, and use of the information created in the analysis.

#### 4.2.2 Bottom-up or Participatory Approach for Developing Indicators

- A bottom-up approach to develop indicators

is particularly useful when action from participants is needed.

- Taking a participatory approach is also helpful for developing tailored indicators because integrative approaches require interaction and feedback from the study subjects, thus aligning with their needs and interests.

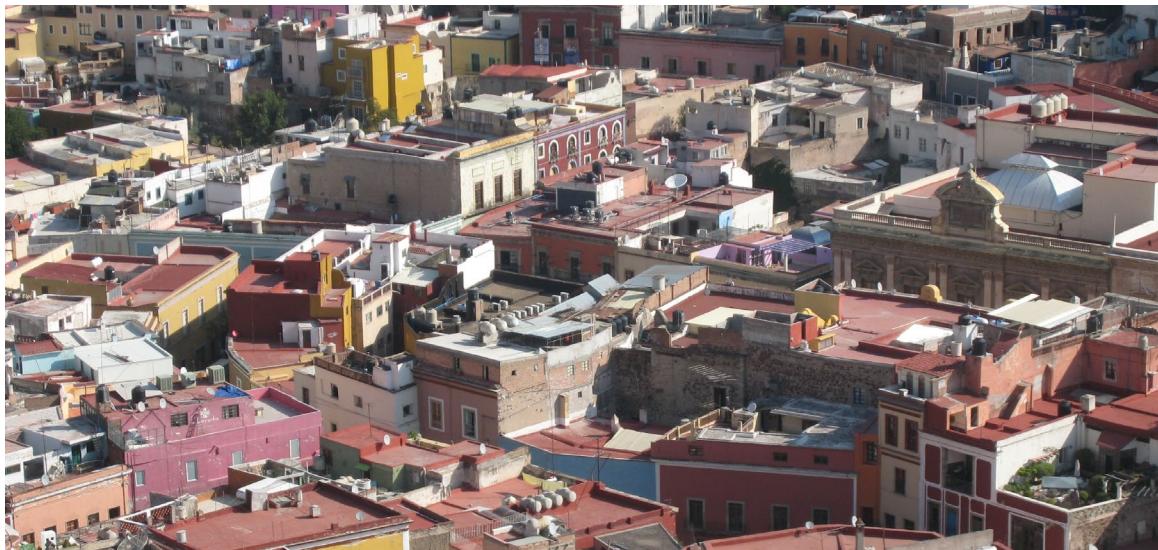
#### 4.2.3 Bridging the Gap between Expert-led and Bottom-up Approaches

- A number of strategies can be used to bridge between expert-led and bottom-up approaches to develop indicators such as: selecting the appropriate methods, building comparative frameworks, selecting the scale of assessment, and defining the points of convergence in the interest of experts and citizens.
- Literature often recommends using a bottom-up approach to develop indicators, when the objective of the assessment is to implement a project.



## Appendix B

### Density Definitions



#### Densification Definition and Concepts

Density, at its most basic, is a measure of the number of units in a given area (Forsyth 2003, 3). Typically, density measures take into account three things: what **unit** is to be measured (housing, jobs, population, built floor areas, etc.); over what **area** the units are measured (parcel, neighborhood, city, metropolitan area); and what land will be **included or excluded** in that area (residential uses, streets and public infrastructure, local neighborhood uses, all land). Gross measures put a simple boundary around an area and measure all the land inside it; **net** measures exclude certain kinds of land. These considerations create an almost endless variety in density measures.

Traditional Mexican towns and cities may have relatively high densities without tall buildings. Pictured here is downtown Guanajuato, Mexico.  
*Photo: Collection of Ann Forsyth*

While it is perhaps one of the most widely used measures in the fields of urban planning and design, it does not do a very good job of measuring the physical or social quality and design of a building, neighborhood, or city (Boyko and Cooper 2011, 2). Furthermore, density can be measured in a variety of ways, meaning the same area can have a number of different densities (Forsyth 2003, 2). For example a parcel of 10 units per hectare may be adjacent to a park in the same block giving a block density of perhaps 5 units per hectare if the

park takes up half the block. Such variation means it is necessary for policy makers, planners and designers to be specific about what they mean when they discuss density. This is especially important when discussing densification and compact city policies. Since there are no exact definitions for what constitutes low, medium, and high densities, governments, again, need to be specific about the types and forms of density they are promoting.

To complicate matters, it might be desirable to use different measures of density for different purposes. For example, planners and designers might be interested in measuring the density of dwelling (or housing) units in a given neighborhood, as this measure gives some sense of the physical character of the area. On the other hand, an engineer or policy maker might be interested in measuring the density of population in that same area, as this number reflects the intensity of usage or demand for certain municipal infrastructure and services (Boyko and Cooper 2011, 5-8).

### Types of Density Measures

The following are some of the most commonly used measures for residential density:

- **Site/parcel density:** A measure, usually of dwelling units or residential population per site/parcel area (Forsyth 2003, 5). Parcel density is commonly used in zoning and land use codes as a way to regulate the form and intensity of development that can occur on a lot. Measuring site density is relatively straightforward, as there is no need to distinguish between gross or net measures. However, it can be difficult to perceive from physical observations, as parcel boundaries are not always evident (Forsyth 2003, 5).
- **Block density:** Block density measures the dwelling units or residential population per area of a city or neighborhood block (Forsyth 2003, 5). This is also relatively easy to measure, as many national census agencies use a block as the minimum unit of measurement (such as *manzanas* in Mexico). However, the boundaries of a block are not always evident, and decisions about what land to include or exclude may still be necessary (Forsyth 2003, 5). For example a “block” may include the area within parcels, or may be measured out to the street centerline—the latter would include much more land for the same number of dwellings or people making the density lower.

- **Net neighborhood density:** Net neighborhood density measures the number of dwelling units or residents divided by the area of the neighborhood, excluding city-wide uses such as parks or large commercial areas (Forsyth 2003, 6). There is no standard way of measuring a neighborhood, but the area included should conform to larger census geography or to a city-identified area (Forsyth 2003, 5). Uses that do serve the neighborhood are included; however, land uses that serve the city or region are excluded. The line between neighborhood and other uses can be difficult to determine.
- **Net neighborhood residential density:** Net neighborhood residential density measures the number of people or residential dwelling units divided by the total residential land area (Forsyth 2003, 5). For this measure of density, it is necessary to calculate both the area of the neighborhood and the amount of residential land it contains (Forsyth 2003, 5). There are no standards for deciding what to include as residential land and what to exclude, although excluded land typically includes: “commercial and industrial areas, shops, commercial garages, public parks/playgrounds, undeveloped vacant land, vacant unsuitable land, schools, churches, public streets, public parking spaces” (Forsyth 2003, 5).
- **Net neighborhood residential building type density:** This measure is similar to the previous one, however it counts only residential buildings of a certain type and associated land area (such as single family home density or townhouse density) (Forsyth 2003, 5). This measure is useful to better understand the composition of neighborhoods, and the amount of space associated with each.
- **Gross neighborhood density:** This measures the number of dwelling units or residents divided by the total area of the neighborhood. No exclusions are made (Forsyth 2003, 6).
- **City or municipal density:** This measures the number of dwelling units or residents divided by the total area of the city or municipality (Forsyth 2003, 6). This can be a useful measure when the entire area of the city is built-out. However in cases where substantial portions of the land area is undeveloped, the results will be skewed. For this reason, it is common to include only developed land in the calculation (Forsyth 2003, 6).

- **Metropolitan density:** Similarly, metropolitan density measures the number of dwelling units or residents divided by the area of the metropolitan area (Forsyth 2003, 6). Unlike city density, it is not common to exclude undeveloped land in this measurement (Forsyth 2003, 6).

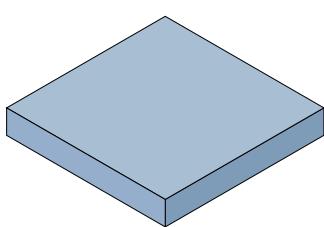
While these examples are all for residential density, it is possible to use these same methods to measure other types of density, such as employment density.

### **Additional Related Concepts and Metrics Related to Densities/Metrics**

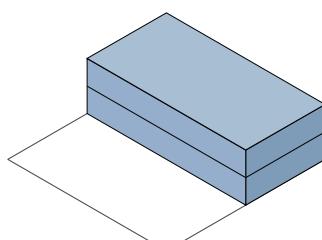
Other methods for measuring the built environment are also common in urban planning and design. Metrics that gauge the intensity of land uses or the mass of buildings are most common. While not strictly measures of density, they are often used in conjunction or in place of density, especially in zoning codes and development regulations. They include:

**Floor area ratio (FAR):** Floor area ratio divides the built floor area of a building or structure by the area of the parcel on which it is built (Forsyth 2003, 6).

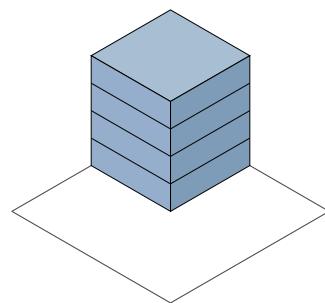
$$\text{FAR} = \frac{\text{Built Floor Area}}{\text{Area of the Parcel}}$$



Proposed: FAR = 1



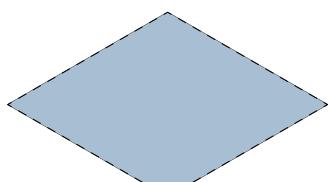
FAR = 1



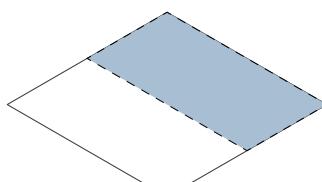
FAR = 1

**Building site coverage:** Often used to measure open space on a site, building site coverage divides the area of the building's footprint by the area of the parcel or site (Forsyth 2003, 6).

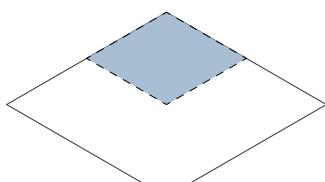
$$\text{Building Site Coverage (BSC)} = \frac{\text{Area of Building Footprints}}{\text{Area of the Parcel}}$$



Proposed Update: BSC = 1



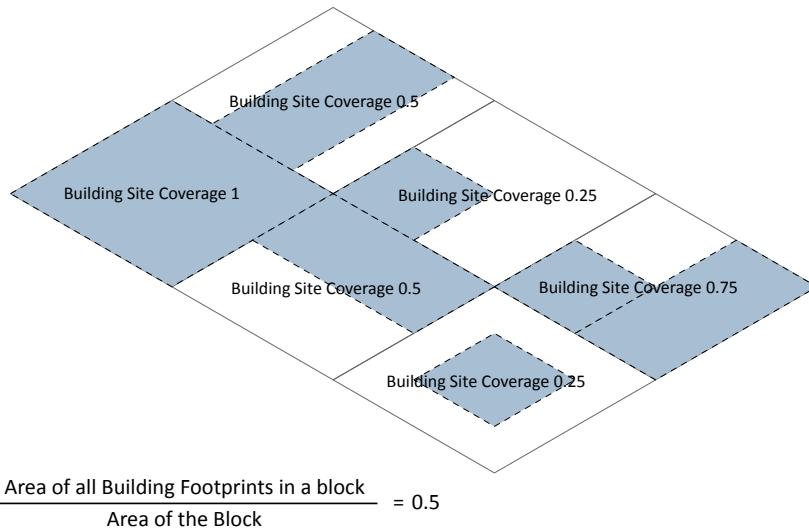
BSC = 0.5



BSC = 0.25

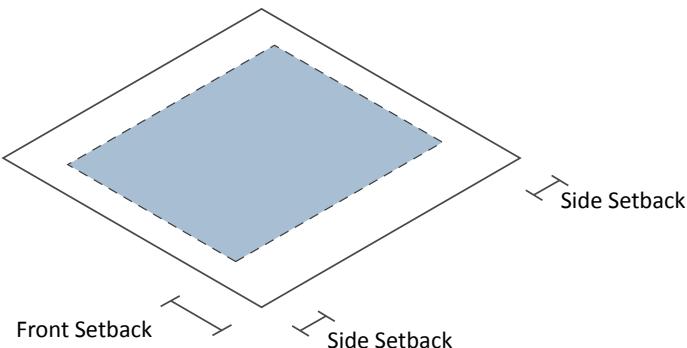
**Building block coverage:** Building block coverage is calculated in the same manner as building site coverage, except it covers an entire block. It divides the footprints of all the buildings found on a block by the area of the block (Forsyth 2003, 6). This measure, more so than building site coverage, reflects a person's actual experience of the built environment (Forsyth 2003, 7).

$$\text{Building Block Coverage} = \frac{\text{Area of all Building Footprints in a block}}{\text{Area of the Block}}$$



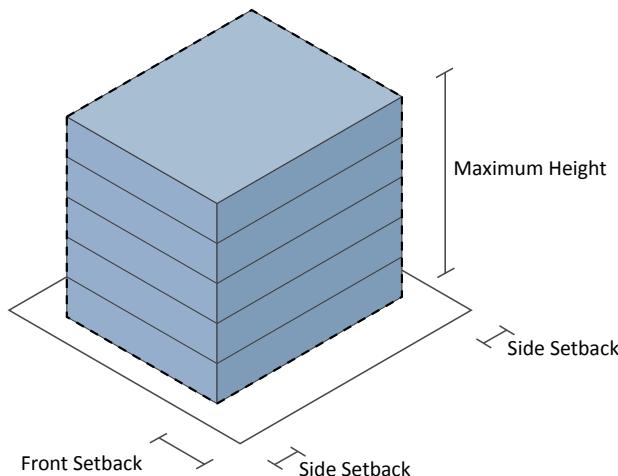
**Front or side setbacks:** This measures how far from a property line a building must be.

Front and Side Setbacks



**Building envelope and height:** The maximum building area allowed given regulations concerning 1) building height and 2) setbacks that measure minimum distance from a property line to a building.

Building Envelope



However, both density measures and building/land use intensity measures do a poor job of describing or measuring a particular physical layout or design of a building or neighborhood. This is mainly due to the fact that each of these measures allows a variety of configurations that will all result in the same outcome. For example, a high-rise apartment building seems as though it should be high-density, however, if the parcel on which it is sited is large, then its density will be low. It might even be the same as a single-family home placed on a small lot (Forsyth 2003, 4).

Humans perceive density and land use intensity differently from the way they are measured. Aversion to high density has more to do with perceptions and associations than with the numerical measurement of density. This makes residents wary of any plan or policy that will increase density. In residents' minds, the result will be similar to any bad example of high-density development they have experienced. On the other hand, a good design can lead people to perceive the project to be much lower density than it really is. Perceptions and the design of density and high-density areas must be an essential aspect of any efforts to support densification.



# Appendix C

## Sustainability Definitions

### Origins of Sustainability

According to Neuman (2005), sustainability is “a debate about how to live” (Neuman 2005, 17). If this is true, then policy makers, urban planners, architects, and others have debated sustainability, and the related concept of sustainable development, for centuries. However, the term itself, used in the context in which it is used today, can be traced back to a report issued by the Club of Rome in 1972 called *The Limits to Growth*. In this document, the authors concluded that “if the present growth trends in world population, industrialization, pollution, food production, and resource depletion continue unchanged, the limits to growth on this planet will be reached sometime within the next one hundred years...It is possible to alter these growth trends and to establish a condition of ecological and economic stability that is sustainable far into the future” (Meadows et al. 1972, 23-24). In 1980, a similar report, the *World Conservation Strategy*, issued by the International Union for the Conservation of Nature (IUCN) for the United Nations Environment Programme (UNEP) and the World Wildlife Fund (WWF) also called for sustainable development, which it believed could be achieved through “the conservation of living resources” (IUCN 1980, iv).

Despite the attention brought by these two documents to the concept of sustainable development, it remained relatively unimportant in policy discussions. Not until the publication of *Our Common Future*, the report of the World Commission on Environment and Development (also known as the Brundtland Commission, after Gro Harlem Brundtland, the chairwoman of the commission) in 1987 did the term gain widespread attention among international, national, and local organizations (Wheeler and Beatley 2009, 59). The report created what is perhaps the best-known definition of sustainable development: development that “meets the needs of the present without compromising the ability of future generations to meet their own needs” (World Commission on Environment and Development 1987). While this report certainly had implications for urban growth and development, the link between cities and sustainable development was strengthened in 1992 during the UN Conference on the Environment

and Development held in Rio de Janeiro (also known as the Earth Summit) (World Bank 2011, 22).

During the Earth Summit, the United Nations issued two important documents. The first, the Rio Declaration, set out a number of ways in which UN member nations and affiliated international organizations could work to promote sustainable development (Wheeler and Beatley 2009, 72). The second, known as Agenda 21, emerged as a framework for a new system of sustainable urban development that was efficient, equitable, rational and enduring (World Bank 2011, 22). Among other things, it encouraged human settlement patterns that improved “the social, economic and environmental quality of human settlements” (UNCED 1992, 7.4).

### Proliferation of Concepts and Definitions

While these reports and conferences were successful in bringing attention to the need for a change in how humans approached development, they were largely unspecific about how to define, measure, and implement sustainable development. Generally, sustainable development points to the need to ensure current development does not compromise the development potential of future generations, and to take into account economic, social, and environmental costs and benefits. There is little consensus about which one of these aspects is most important, which indicators or metrics best measure sustainability, or even which models of urban development are the most sustainable. As a result, there has been a proliferation of various, and sometimes competing, ideas about what constitutes sustainable development and how it should be operationalized and measured (Parris and Kates 2003, 13.2; Neuman 2005, 17).

Neuman (2005) divides ideas of sustainable development into five distinct intellectual

traditions, which help one to understand the variety of ways in which the term can, and has, been used. They are:

- **Capacity:** Capacity refers to the extent to which a place can support living things (Neuman 2005, 17). Also known as carrying capacity, it borrows directly from ecology, where it is defined as the “limit at which populations can be maintained by their habitat without being restricted by food, water, land, disease, or predation and without compromising their habitat’s capacity to support that population” (Elton 1927, cited in Neuman 2006, 17). *Limits to Growth* was concerned about the capacity of the earth to support human life. Similar concepts include ecological footprints.
- **Fitness:** Fitness “implies an evolutionary process marked by the mutual interaction between species and environment” (Neuman 2005, 18). In urban development, it implies that there is, and must be, a relationship between development and the environment, that development and the human systems that come with it should fit into existing environmental and ecological systems (Neuman 2006, 18). At the same time, this development also needs to be compatible with local cultures and customs.
- **Resilience:** Resilience has quickly become the latest buzzword in urban development. It is a concept borrowed from public health, and describes how well a city or community is able to adapt to or absorb sudden shocks or changes while still functioning as it did before (Neuman 2006, 18). It also refers to the ability of the city or community to recover once the shock ceases to affect it. This concept is increasingly important to consider as predictions of climate change indicate an increase in the frequency and severity of weather-related events.

**Table C.1 Sustainability definitions**

<b>Definitions of Sustainability</b>	<b>Sustainability Traditions</b>	<b>Agency/Source</b>
"Sustainability is based on a simple principle: Everything that we need for our survival and well-being depends, either directly or indirectly, on our natural environment. Sustainability creates and maintains the conditions under which humans and nature can exist in productive harmony, that permit fulfilling the social, economic and other requirements of present and future generations. Sustainability is important to making sure that we have and will continue to have the water, materials, and resources to protect human health and our environment."	Capacity, balance, fitness, resilience	United States Environmental Protection Agency (2014) <sup>1</sup>
"Development that meets the needs of the present without compromising the ability of future generations to meet their own needs."	Balance, capacity	World Commission on Environment and Development (1987) <sup>2</sup>
"Sustainable development means that the needs of the present generation should be met without compromising the ability of future generations to meet their own needs...It is about safeguarding the earth's capacity to support life in all its diversity and is based on the principles of democracy, gender equality, solidarity, the rule of law and respect for fundamental rights, including freedom and equal opportunities for all. It aims at the continuous improvement of the quality of life and well-being on Earth for present and future generations. To that end it promotes a dynamic economy with full employment and a high level of education, health protection, social and territorial cohesion and environmental protection in a peaceful and secure world, respecting cultural diversity."	Capacity, balance, resilience, diversity	Sustainable Development Strategy of the European Union (2006) <sup>3</sup>
"Using, conserving and enhancing the community's resources so that ecological processes, on which life depends, are maintained, and the total quality of life, now and in the future, can be increased."	Capacity, fitness	Australian National Strategy for Ecologically Sustainable Development (1992) <sup>4</sup>
"Social sustainability stems from actions in key thematic areas, encompassing the social realm or individuals and societies which ranges from capacity building and skills development to environmental and spatial inequalities. In this sense, social sustainability blends traditional social policy areas and principles, such as equity and health, with emerging issues concerning participation, needs, social capital, the economy, the environment, and more recently with the notions of happiness, wellbeing and quality of life."	Diversity, resilience	Oxford Institute for Sustainable Development (2011) <sup>5</sup>

Sources: 1. United States EPA 2014; 2. World Commission on Environment and Development 1987; 3. Council of the European Union 2006, 2; 4. Australian Government Department of Environment 1992; 5. Woodcraft et al. 2011, 16.

- **Diversity:** Like sustainability, diversity is a broad topic, and can range from protecting biodiversity of natural areas, to promoting a mix of land uses, or by encouraging the integration of various social and income groups (Neuman 2005, 19). Usually, diversity relates directly to the social or equity aspects of sustainability. Participation and empowerment of all citizens in decision-making processes is another important aspect.
- **Balance:** Balance is perhaps one of the most important of these five topics, as it is present in so many discussions about sustainability. In one sense, it refers to the balance between the natural environment and human development (Neuman 2006, 19), a dynamic inherent to the ideas set forth in the *World Conservation Strategy* and the Rio Declaration. However, balance is also present in decisions related to the economic, social, and environmental aspects of sustainability, as well as in the main ideas of the Brundtland report, to balance the needs of today with those of tomorrow (Neuman 2006, 19). Parris and Kates (2003) refer to this balance as a decision about what is to be sustained and what is to be developed (Parris and Kates 2003, 13.2).

While some conceptions of sustainable development fall neatly into one of these five categories, as **Table C.1** shows, it is far more common for considerable overlaps between two or more of these categories to exist (Neuman 2006, 20). The breadth and variation that exists within concepts and definitions of sustainability are both a strength and a weakness (Blair et al. 2002, 3). It is good that a topic that is “a debate about how to live” considers and is open to such a wide range of voices. However, the uncertainties about what is sustainable development can frustrate policy makers and activists eager to affect and create

change in the way development is approached. What concepts organizations choose to include in their definition of sustainability is largely a reflection of their objectives, priorities, and organizational purpose (Parris and Kates 2003, 13.3).

### Other Terms Related to Sustainable Development

Just as there has been a proliferation of conceptions of sustainable development, there has also been a proliferation of terms that, while not specifically containing the word sustainable or sustainability, are still related. These topics include: ecological footprints, energy efficiency, renewable resources, resilience, carbon footprints, quality of life, smart growth, and human development. These focus on both ecological and social concerns.



## Appendix D

### Case Study: Urban Consolidation, Sydney, Australia



#### Overview

Sydney is the capital of New South Wales (NSW) and the largest city in Australia by population. Sydney serves as the “gateway” between Australia’s major eastern cities and regional centers such as Tokyo, Shanghai, Hong Kong, and Singapore (NSW Government 2010, 1). The dominant type of residential development in Greater Sydney is separate houses (58.9%), while high-density dwellings make up 70.2% of dwelling structures in the small central City of Sydney (Australian Bureau of Statistics 2011).

Higher density infill housing in a new transit-oriented development near the Sydney airport.

*Photo: Collection of Ann Forsyth*

#### History and Key Players

Urban consolidation has been Sydney’s primary planning approach since the 1980s; however, the rise of the Labor Party in NSW in 1995 led to policy reframing. In Australia, state governments are the entities with constitutional authority in spatial planning and infrastructure provision and do not need approval by federal or local authorities (Searle and Bunker 2010, 164). As such, state governments

create highly detailed, prescriptive metropolitan plans that serve as blueprints for infrastructure organization and investment (Searle 2010, 164). City councils are directed to implement these plans through zoning changes and sub-regional plans. The metropolitan plans often rely on private investment for the development of their strategies (Searle and Bunker 2010, 166).

### Project History and Current Issues

Urban consolidation is an approach that seeks to create a denser—and ostensibly more efficient—urban form (Searle 2007, 1). Urban consolidation is expected to reduce state spending by containing sprawl and the costs of far-flung infrastructure expansion. NSW planners adopted consolidation policy in the 1980s. They aimed to reduce infrastructure costs, create higher-density housing, increase housing affordability, bolster public transit, and improve access to jobs and services in the face of reduced state funds and high oil prices (Searle 2007, 2).

Implementation of consolidation strategies became a point of local contention, however. Older suburban communities and their local councils resisted, fearing degradation of open space, streetscape, and privacy (Searle 2007, 2-4). These worries were not unfounded. Dual occupancy policies (policies that allowed accessory dwellings in many locations) did stimulate increased subdivision, but in some cases lack of design controls allowed overbuilding and shifts to unattractive streetscapes (Searle 2007, 5). Furthermore, density requirements for greenfield development led to increased medium-density development at the urban fringe, with limited access to public transit and employment (Searle 2007, 5). Despite these challenges, by 1995, multi-unit approvals comprised 60% of Sydney's total dwelling approvals, up from 34% in 1989-90 (Searle 2007, 7).

When the Labor Party was elected to state government in 1995, the emphasis of urban consolidation efforts shifted to greater local determination and development of older industrial areas with weak community presence (Searle 2007, 7). The government directed Landcom, the state development agency, to sell off its suburban property and focus on promoting private sector development of inner city lands (Searle 2007, 7-8). In response to backlash against new urban consolidation projects, the state government pursued measures to improve residential flat (apartment) design (Searle 2007, pp. 10). For example, the State Environmental Planning Policy (SEPP) No. 65 – Design Quality of Residential Development stipulated that all three or more story buildings with four or more flats must be designed by certified architects (Searle 2007, 10). The SEPP also enumerated 10 design principles that local plans must address. To further explain principles and best practices for apartment design, the NSW government published a Residential Flat Design Pattern Book in 2001 (Searle 2007, 10).

The 2005 NSW metropolitan plan, *City of Cities: A Plan for Sydney's Future*, sought to mitigate a surge in housing prices by identifying new areas for urban development in the north west and south west, focused on strategic employment centers and areas along transit corridors (Searle 2007, 11). The plan called for development corporations to expedite development processes, which were more complicated with brownfields than with greenfield sites, due to more fragmented land ownership and possible opposition from existing residents (Searle 2007, 12). These corporations were to have similar powers to the City West Development Corporation, which the state government created in 1992 to administer government sites and provide infrastructure in the central city redevelopment of Pyrmont-Ultimo's (Searle 2007, 6 and 12).

The *Draft Metropolitan Plan for Sydney 2031* expands upon the 2005 plan by incorporating components of the \$AUS 50.2 billion Metropolitan Transport Plan. It seeks to create a “multi-centered, more connected, integrated global city” continuing a tradition of multiple centers outlined in metropolitan plans since the 1940s (NSW Government 2010, 2). The plan proposes concentrated growth organized around nine “city shapers”—areas with transport connections, housing, jobs, and other infrastructure (NSW Government 2013, 7–8). It also seeks to strengthen Parramatta as a second central business district (CBD) and to support growth of specialized employment centers (NSW Government 2013, 10).

Some critics argue that planners will need to more explicitly confront social inequity in Sydney and consider their own roles in channeling market forces for the public good. Otherwise, *The Draft Metropolitan Strategy* “risks reinforcing a planning system which has become defined in terms of development feasibility alone rather than a broader, strategic sense of getting housing ‘right’ in order to build a more efficient, productive and equitable city” (Pingree and Randolph 2013, 4). Increased use of evidence in strategic planning purposes may help to support public engagement (Pingree and Randolph 2013, 6).

A new mixed-use town center in Rouse Hill in outer suburban Sydney. The center combines civic uses, shopping, and housing.

*Photo: Collection of Ann Forsyth*



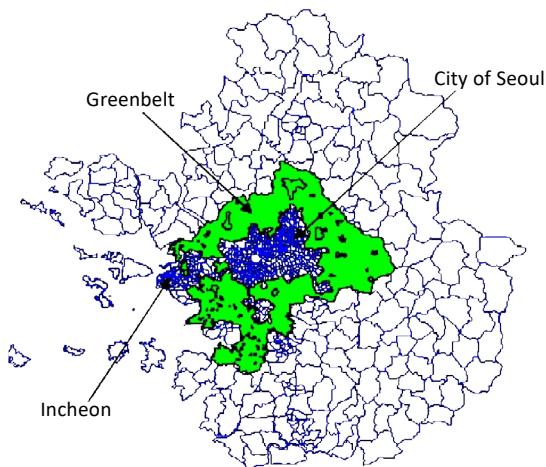
## Key Questions Raised

- What methods allow for successful implementation of large-scale plans at the local level given local resistance and variation in needs among localities?
- How can government entities direct market forces and maximize accountability, coordination, and security for public-private partnerships?
- How can government entities create sufficient certainty for developers, investors, and community members without planning in a way that is excessively prescriptive?
- How prescriptive and detailed should plans be?
- What kinds of design guidelines should planners use to shape the impacts of development on community character and streetscape?
- What kinds of evidence should planners use to form and rationalize their plans and to engage community members?
- How should planners respond to emerging global problems like climate change?

## Implications for Other Communities

- Implementing densification or consolidation policies can take decades.
- Planning should incorporate flexibility to consider social, economic, and environmental dynamics on more granular scales.
- Interactions with developers may cut across levels of government; public-private partnerships can provide a forum for broader planning conversation.
- Planners should periodically step back to ensure that planning strategies have not reverted to a string of reactions and still embody desired policy objectives.

## Case Study: Greenbelts, Seoul, Korea



Seoul's extensive greenbelt.

*Source: Bengston and Youn 2006, 4.*

### Overview

Greenbelts are one type of urban growth containment policy that has been used in many cities and regions around the world. The greenbelt created around Seoul, Republic of Korea is a long-standing example of an attempt to stymie urban sprawl and encourage sustainable growth.

In 1970, the Korean economy was growing at a rapid pace, inducing great population growth and migration from rural to urban centers; Seoul's growth rate from 1950-1975 was 7.6%, the fastest in the world (United Nations 2002).

**Technical Description:** “Seoul’s greenbelt is very large, consisting of a band of green space, similar to a park, averaging about 10 km wide, beginning about 15 km from Seoul’s central business district. After being extended four times, by 1976 Seoul’s greenbelt was 1,566.8 km<sup>2</sup>, which amounts to 13.3% of the entire Seoul Metropolitan Area” (Bengston and Young 2006, 3).

### History and Key Players

Using the greenbelts of London as an example, President Park Chung Hee introduced Korea’s greenbelt system in 1971. The central government’s Ministry of Construction submitted an alternative green

belt proposal to the National Assembly and it was settled through legislation from the National Assembly two months later (Kim and Kim 2008, 41). The City Planning Law of 1971 and the National Comprehensive Physical Plan of 1973 designated greenbelts around fourteen cities in Korea, including Seoul. The greenbelt system was adapted in the Korean context and implemented as a very top-down initiative; the boundaries were defined without public input.

## Approach

In evaluating the greenbelt, Bae (1998) articulated seven objectives for the Seoul greenbelt.

1. Promote national security, as the greenbelt allowed the government to control the demilitarized zone of Seoul
2. Removal of illegal shantytowns on the edge of the city
3. Contain urban sprawl
4. Reduce rapid population growth and industrial concentration
5. Limit land speculation
6. Protect agricultural land
7. Safeguard environmental and natural resources in the area

## Project History and Current Issues

Once established, the greenbelt underwent revision and has been a focal point of many political platforms over the years. Continuous political turnover and disparate visions for the revision of the greenbelt have made change slow and contentious and public discussions were not allowed at the time of the Park regime (Lee and Linneman 1998), so the greenbelt policy was altered very little for almost thirty years. Political crises and a coup d'état in 1980 and eventual democratization in 1987 changed the political atmosphere, leading to calls for greenbelt reform.

Additionally, rapid urbanization of Seoul put pressure on the restrictive greenbelt.

Early criticism of the greenbelt plan was stifled as discussions of problems associated with it were prohibited until the end of the Park regime in 1979. As land use regulations of the greenbelt were relaxed in the 1990s, development in designated “semi-urban” and “semi-agricultural” areas was patchwork and not cohesive, making it difficult for residents to tolerate development regulations. Once Kim Dae Jung won the presidential election of 1997, the National Committee for Greenbelt Policy Reform was established. This committee was chaired by a professor at Seoul National University and included three greenbelt residents, one environmental group, twelve scholars, three government officials, and three journalists (Park 2001). The Committee recommended the maintenance of the greenbelt as a growth management tool, but with adjustments in which zones should be lifted around small- and medium-sized cities. In large cities, the greenbelt boundaries were to be based on environmental assessments. The committee also dealt with the problem of windfall financial benefits due to relaxed boundaries, compensation for landowners in greenbelt areas, and development in villages within greenbelts. This reform report met opposition; a new policy in 1999 further relaxed and reduced the greenbelt (Kim and Kim 2008, 47).

Political debates about further reform of the greenbelt continued through the 2000s. By 2005, a final greenbelt adjustment plan for the Seoul metropolitan area was completed. This plan proposed clusters of land to be released for development rather than fragmented areas. Business areas and housing development areas were increased to minimize departure of residents from greenbelt areas.

## Key Questions Raised

- The greenbelt has mixed reviews by Koreans. Some enjoy the recreational use of the park and appreciate the reprieve it provides from the city. Others, mainly landowners in the greenbelt, have historically felt the development of the greenbelt was unjust, as they were not initially compensated for the land. Still others suffer from longer commuting times and confusing development regulations attributed to the greenbelt. As Bengstom and Young outline: “Lee (1999) cites several surveys conducted in the 1990s that drew strong support from citizens, environmentalists, and Korean planners, but most greenbelt property owners who viewed it as a seizure of private property, opposed the policy” (Bengston and Young 2006, 6).
- The costs and benefits for growth management and sustainable development are also open to debate (Bengston 2006).

## Implications for Other Communities

- Seoul’s greenbelt has been a major success in terms of open space. It conserved the area’s heritage rooted in nature and its essential ecosystem services (Bengston 2006). “Seoul’s greenbelt has been remarkably successful at protecting important agricultural land, providing badly needed recreational resources in a megacity with few parks, protecting the beauty and natural heritage of the ancient capital of Korea, and maintaining vital ecosystem services” (Bengston 2006, 11).
- The greenbelt may have caused leapfrog development, with longer commutes for residents of new housing constructed outside the greenbelt.
- The greenbelt is associated with higher land and housing prices in urban areas around the greenbelt, causing land developers and owners to call for a review of the policy, and adding to commuting costs and congestion.
- Compensation of greenbelt owners is a particularly important issue.

**Table D.1 Development control in the greenbelt**

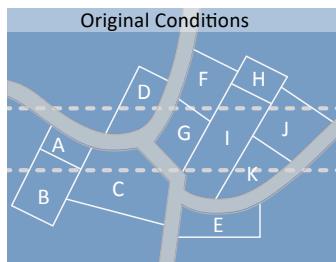
Classification	Main Contents
<b>Banned development activities</b>	<ul style="list-style-type: none"> <li>1. New building construction</li> <li>2. Installation of facilities</li> <li>3. Alteration of land use</li> <li>4. Land subdivision</li> <li>5. Cutting trees for lumber</li> <li>6. Urban planning business [Note: this is unclear in the original.]</li> </ul>
<b>Permitted development activities</b>	<ul style="list-style-type: none"> <li>1. Construction of buildings and facilities for public use</li> <li>2. New construction</li> <li>3. Installation of facilities for agriculture and fisheries</li> <li>4. Extension, reconstruction, and change of use of houses existing at the time of the area's designation as a green belt</li> <li>5. Reconstruction and change of use for non-residential buildings and facilities</li> <li>6. Transferring construction of demolished buildings and facilities by public development</li> <li>7. New construction of facilities to improve residential life [public facilities]</li> <li>8. Alteration of land character that is not against its original purpose</li> <li>9. Land separation without new construction</li> </ul>

Source: Kim and Kim 2008, 4, from Ministry of Construction and Transportation 2000, as cited by Kim and Kim.

## Case Study: Land Readjustment, Japan

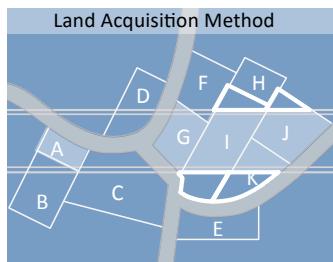
### Step 1

Identify issue: Insufficient street system



### Step 2

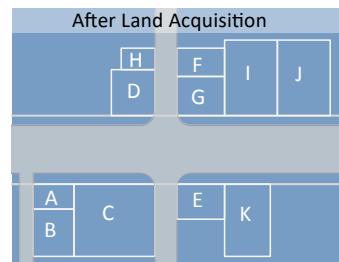
Acquire land



- The streets are not wide enough which, may cause problems in an emergency.
- Land parcels B and H have no street access.
- Shapes of some land parcels are unsuitable for development.
- Land value is lower than developed area.

### Step 3

Reassign lots, while maintaining original land area



- Landowners A and G have to move out.
- Landowners K and J land become too small for a building.
- The land parcel of landowner I has to be divided into smaller ones.
- Landowner F enjoys much greater benefits than the others.

- Everyone can stay in the community.
- Everyone enjoys the benefits fairly.
- The shape of every land parcel is improved in the process.
- Now the land of landowners B and H come to face a road.

## Overview

Land readjustment (LR) is a strategy through which adjoining landowners pool some or all of their land; develop infrastructure; sell off a portion of the land to cover the infrastructure development, planning, and administrative costs; and redistribute the remaining land among the original landowners (Sorensen 2000, 52). This is managed through a government process.

The figure above presents a comparison between conventional land acquisition strategies and land readjustment projects. Commonly, landowners must donate at least 30% of their landholdings for inclusion in a land readjustment project (Sorensen 2000, 52).

The following benefits have been identified as rationales for pursuing land readjustment projects (Sorensen 2000):

- Land readjustment can be a means for the private sector to

Comparison between conventional land acquisition and land readjustment (LR).  
Based on Vergel 2012, 2.  
Diagram by Jorge Silva.

deliver urban land and infrastructure development, thus allowing the government to spend money on other priorities such as industrialization (58);

- Land aggregation and development for land readjustment projects is relatively inexpensive, because (at least in theory) landowners willingly pool their land with little to no government compensation (54);
- Landowners may be less inclined to oppose land readjustment than other development processes because they retain title to most of their land (54);
- Original landowners benefit from new infrastructure and increased land values (54);
- LR is a form of “betterment taxation,” as the beneficiaries of the infrastructure and land development (the landowners) bear the costs (59); and,
- LR discourages sprawl by creating a framework for orderly growth (Sorenson 1999, 2356).

### **Land Readjustment in Japan explained**

By the late 1990s, about one third of Japan’s urban areas had been developed through land readjustment, typically on the fringes of growing cities (Sorenson 1999, 2333). In Japan, there are five types of executors for land readjustment projects: individuals, associations, local governments, administrative agencies, and public corporations, with the first two distinguished as private entities and the latter three as public (Sorenson 2000, 52). Associations are organizations that include “all owners and lessees of land in the project area” (Sorenson 2000, 53).

While in some examples local governments directly manage their land readjustment projects, in more populous cities local governments set up a nonprofit corporation, formally separate but working in close collaboration. The corporations can reduce their borrowing needs by pooling funds from different projects. This is particularly significant because land readjustment typically requires high up-front costs, with revenues toward the end of the project (Sorenson 2000, 68).

The impacts of land readjustment policies in Japan have been heavily shaped by highly fragmented ownership of agricultural lands (Sorenson 2000, 2335). On top of this, farmers have historically been very politically powerful, which has led to policies encouraging the holding of small agricultural parcels. For example, below-market taxation for farmland increases the favorability of holding agricultural land on the urban fringe in expectation of rising land prices (Sorenson 1999, 2337). Regulatory loopholes also facilitate development of extremely small

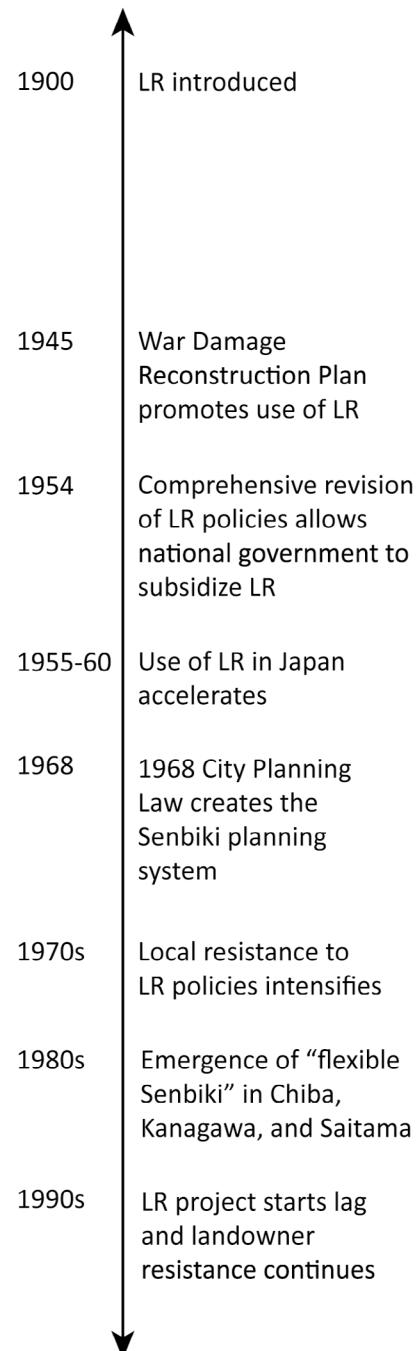
agricultural plots. Exempting developments of 0.1 hectares or less from development permission requirements has encouraged subdivision and led to an uncoordinated patchwork of urban and agricultural parcels (Sorensen 1999, 2338). This fragmented context complicates development of land readjustment projects.

### History and key players

Land readjustment was first used in Japan around the turn of the 20th century, following the German model (Sorensen 2000, 52). Land readjustment met resistance at the local level following WWII, in spite of plans and legislation that promoted its use, illustrated in the timeline at right (Sorensen 2000, 63).

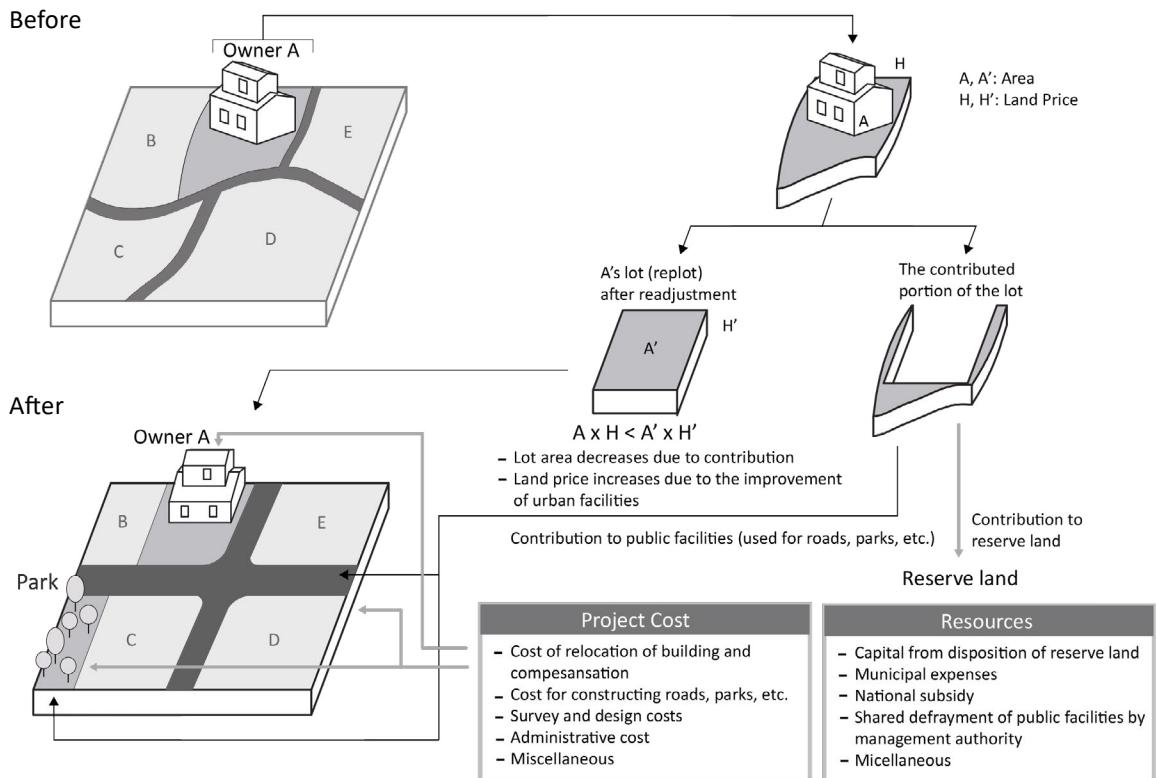
Comprehensive revision of land readjustment policies in 1954 enabled the national government to subsidize land readjustment projects initiated by local governments (Sorensen 2000, 52–53). Subsequently, subsidies drawn from the national Road Improvement Special Account became important sources of funding (Sorensen 2000, 53). Implementation of land readjustment was also facilitated by legal structures providing that projects initiated by local governments did not require landowner consent. This contrasts with privately initiated land readjustment projects, which require consent from two-thirds of landowners owning two-thirds of the pooled land (Sorensen 2000, 63).

Another policy pertinent to land readjustment is the 1968 City Planning law, which sought to control sprawl in suburban areas by creating a planning system called Senbiki and a permission system for land development (Sorensen 1999, 2337). Senbiki designated two types of city planning zones: “the Urbanisation Promotion Area (UPA), which includes existing built up areas and areas intended to be developed within 10 years, and Urbanisation Control Areas (UCA),



Land readjustment timeline in Japan.

*Source: Adapted from Sorensen 2000; and Sorensen 1999.  
Diagram by Virginia Kessler*



where urbanization is to be restrained" (Sorensen 2000, 64-65). The planning system (Senbiki), the development permission system, and land readjustment were meant to function together to promote orderly growth.

Land readjustment process diagram.

Source: JICA 2014, 10

Resistance to land readjustment policies eventually intensified, thus delaying construction schedules and threatening careers of local politicians (Sorensen 2000, 63). This demonstrated the importance of "gaining the prior agreement of local land owners" (Sorensen 2000, 64). In the 1980s, rapid urban sprawl led to the emergence of "flexible Senbiki" in Chiba, Kanagawa, and Saitama, the three main suburban prefectures near Tokyo (Sorensen 2000, 64; Sorensen 1999, 2342). The policy provided that land readjustment projects in UCAs could be up-zoned to UPA in order to increase development and improve profits, while underdeveloped areas in UPAs, termed "Designated Problem Areas," would be downzoned to UCA if action were not taken to launch land readjustment organizing committees in those areas (Sorensen 2000, 65). Nonetheless, by 1997, land readjustment projects had begun in only 35% of the Problem Areas in the Saitama prefecture, and landowner opposition persisted (Sorensen 2000, 65).

## Criticisms of Land Readjustment

Extensive spatial and qualitative analysis from Sorensen (1999, 2339) demonstrates key disadvantages to the use of land readjustment for urban development. Sorensen's research indicates that the land readjustment is so complex, costly, and time-intensive that it is unattractive for private entities to initiate land readjustment projects. Interviews with local government planners suggest that the preparation time for legal initiation of a project takes 5-10 years of steady work by 3-5 local government staff, significant outreach with landowners, and specialized skills to carry out the development process (Sorensen 2000, 67-69).

Sorensen's analysis also challenges the beneficial outcomes of land readjustment, suggesting that land readjustment does not in fact create an ordered pattern of development across the landscape. For practical reasons, land readjustment projects are typically limited to 40-150 hectares, and thus create a "scattering of LR projects" accompanied by little infrastructural improvement in the surrounding areas of urban sprawl (Sorensen 1999, 2354-6).

Finally, Sorensen suggests that the land readjustment in Japan may fail to mitigate economic inequities. Landowners tend to wait for land prices to rise before building-up and selling their land, thus further preventing the poor from gaining access to land (Sorenson 2000, 60). Additionally, large landowners also tend to benefit more from increases in land prices than do small landowners (Sorenson 1999, 2340).

Despite these challenges, land readjustment has spread internationally as a planning mechanism. This has been enabled in part through foreign aid from the Japanese International Co-operation Agency (JICA), the Japanese Ministry of Construction (MOC), and the Japanese Overseas Economic Co-operation Fund (OECF) for financing and administrative support for land readjustment in countries like Indonesia, Nepal, Thailand, and Malaysia (Sorensen 2000, 56). JICA has also helped to introduce land readjustment principles to planners in Colombia and Brazil (Vergel 2012).

## Key Questions Raised

- Under what circumstances can land readjustment be implemented as a planning strategy elsewhere?
- What planning frameworks are needed in conjunction with land readjustment to help promote both orderly growth and greater access to urban amenities for the poor?

- If land readjustment projects are costly and time intensive, what strategies can be implemented to facilitate and expedite the negotiation process?
- How should public opinion or participation be integrated into the development and planning process?
- In what capacity should urban development and infrastructure be provided by the private sector? To what extent and when should it be provided by the public sector?
- How can the private sector best be held accountable for developing adequate infrastructure?

### Implications for Other Communities

The significant costs associated with land readjustment in Japan point to potential complications with implementing this tool in other countries. As Sorensen (2000, 69) suggests: “An activist local government, with sufficient staff and resources to be able to sustain an active organizing program over many years is clearly required.” Land readjustment will not necessarily function as a consensus-based process; particularly in countries with strong property rights, considerable resources must be expended to gain consent from opposing landowners. Additionally, if countries rely on the private sector to provide infrastructural improvements and investment fails to materialize, developing the infrastructure later may prove more expensive than if they had been provided by the government while land prices remained low (Sorensen 1999, 2355). The case of land readjustment in Japan illustrates the inadequacy of relying solely on particular planning tools to promote orderly growth: a more comprehensive planning regime is needed (Sorensen 2000, 70).

## Case Study: Corridor Housing Initiative (CHI), Twin Cities, Minnesota, USA



### Overview

In the early 2000s, Minneapolis's comprehensive plan proposed developing new housing along transit routes. However, building did not proceed smoothly as housing developers encountered fierce opposition from neighborhood groups who felt they had not been included in the project planning process. Gretchen Nichols of the Center for Neighborhoods in the Twin Cities was the initiator of a process that would bring together neighborhood groups, developers, and city officials.

In each corridor the initiative process started with a steering committee of city planning staff and representatives from community groups, business associations, and other critical stakeholders. That committee reviewed planning documents, identified key issues, and planned outreach events to educate members of the community about the development process. The goal was to produce a development preferences sheet that acts as guidelines for future development in the neighborhood.

### Project History and Current Issues

From 2003-2010, Corridor Housing Initiative (CHI) worked in 19 corridors in the Twin Cities metro area, as a successful strategy to

Twin Cities workshop participant looking at images of local housing of different densities.

*Photo: Collection of Ann Forsyth*

promote community acceptance, the project was reproduced in a modified form in Chicago. Four out of the first five corridors where the program worked had projects in the pipeline as of 2010 (Forsyth et al. 2010, 269-270).

Neighborhood groups in the central cities, which had a history of opposing new development, were the focus of the first CHI projects. Groups applied to be part of the steering committee process. For each project, members of these community groups—as well as business leaders and other neighborhood stakeholders—were joined by city officials and developers interested in the neighborhood as equal partners in dialogue. Once assembled, the steering committee reviewed previous planning efforts, proposed promising development sites, and designed a community outreach process (Forsyth et al. 2010, 271-272).

Typically, the process involved initial steering committee meetings; a public meeting meant to identify local concerns; a focus group with neighborhood business leaders and developers; a second public meeting to explain local development conditions; a third public meeting where business leaders and developers talked about the opportunities and challenges they faced in the neighborhood; and a final meeting to determine the neighborhood's development preferences (Forsyth et al. 2010, 272).

The second public meeting featured an interactive project called the block exercise that participants described as “transformational.” During the block exercise, participants created hypothetical development options using an aerial photo of the neighborhood and blocks representing standard unit sizes. A designer made a sketch of what the development option would look like in the context of the neighborhood. A development consultant then produced a quick pro forma based on local assumptions for development fees, construction costs, and rents. In the course of a single meeting,

community members gained a rich lesson in how design can ameliorate perceived issues with new development, and in the types of tradeoffs in terms of density, parking, and open space that developers must make in order to make projects feasible (Forsyth et al. 2010, 273-275).

The Corridor Housing Initiative (now the Corridor Development Initiative) is primarily an educational and capacity-building program. It was meant to result in a savvier public that could engage more productively with city planners and developers. This capacity would diminish over the years as people move out and new residents who have not been involved in the program move in.

### Key Questions Raised

- How can residents engage with the city and the development community to get the kind of development they want for their neighborhood?
- How can the city and the development community make plans that are palatable to powerful neighborhood groups?
- How can capacity building be effective in communities where people move in and out?

### Implications for Other Communities

- Bringing residents and their government closer together can yield relationships that make the development process more fruitful for everyone.
- Understanding that a high-quality development is in the best interests of residents, builders, investors, and the city is the foundation of future conversations between all parties.
- Providing attractive design visualizations helps residents understand that what they imagine to be the negative aspects of development can actually exist in a contextually sensitive way.

## Case Study: Special Area of Social Interest (ZEIS), Brazil

### Overview

The concept of ZEIS, Special Zone of Social Interest, was first devised at the local level in several cities in Brazil. The main objectives of ZEIS are:

1. Allow the inclusion of groups of people who have been marginalized in the city.
2. Introduce services and urban infrastructure in places where they did not reach before, improving the living conditions of the population.
3. Reduce the quality differences in the urban land market that currently exist based on different patterns of residency, and reduce price differences between them.
4. Introduce mechanisms for direct participation of residents in the process of defining public investments in urbanization to consolidate the settlements.
5. Increase city collection of taxes and fees.
6. Increase land supply for low-income urban markets.

In the 1980s, various cities, including Curitiba and Recife, attempted to include provisions regarding informal settlements in their Master Plans. They proposed a zoning category within land use plans with distinct urban parameters for substandard settlements (Smolka 2013). Primarily, the parameters recognize the rights of families illegally occupying land, giving them the opportunity to regularize their situation without the pressure of real estate speculation or the threat of eviction. Though the objective is to regularize and legalize, the ZEIS also “embodies the idea that the ‘right to use’ can be legally recognized even when the ‘right to property’ is absent” (Macedo 2008, 265). Two legal tools used with ZEIS are *Usucapião urbano* and concession of the real right to use *Concessão de Direito Real de Uso* or CDRU, explained in the table.

States establish low-income areas as ZEIS and promote re-qualification, legalization, and urbanization by following Plans of Urbanization, formulated with the participation of the affected low-income populations. The objective is to protect areas from real estate speculation by designating them as areas for low-income housing. Similarly, ZEIS also subjects existing low-income neighborhoods and favelas—a type of low income settlement in which residents do not have claims of ownership to the land—to rules of occupation (Budny 2007, 3). Additionally, ZEIS potentially increases local tax revenues by requiring newly integrated families to pay property taxes and public service fees (Macedo 2008, 266).

**Table D.2 ZEIS Tools**

Tool	Definition	Use
<b>Collective adverse possession</b>	Adverse possession is a doctrine under which a person in possession of land owned by someone else may acquire valid title to it, so long as certain common law requirements are met, and the adverse possessor is in possession for a sufficient period of time, as defined by a statute of limitations.	<i>Usucapião urbano</i> creates the ability to establish uncontested title of ownership for residents who have squatted continuously for five years on small lots of urban land, given no legitimate opposition to the change in title (Budny 2007, 2) “the instrument has successfully established uncontested titles of ownership to people who bought their land but could not get their deeds either because they bought the land from swindlers or because there are irregularities in the subdivision of lots” (Budny 2007, 5).
<b>Concession of the real right to use</b>	Real Concession Rights Agreement of Use. It can be free or paid, individual or collective. It is the Administrative Agreement that transfers real property rights.	CDRU may be applied in cases in empty areas intended for housing provision; in occupied areas, subject to real pressure or areas of land conflict; sustainable use of wetlands and the security of tenure of traditional communities; and for commercial purposes. The CDRU is accepted as collateral in mortgage contracts.

Adapted from Budny 2007.

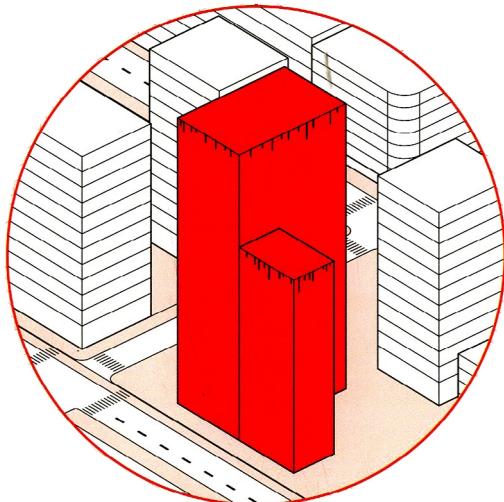
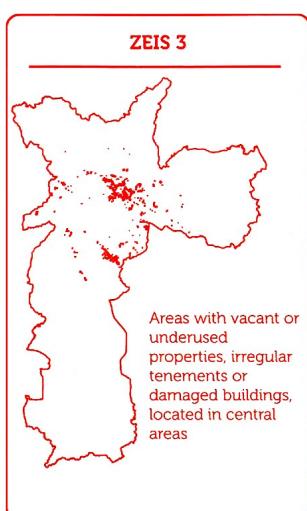
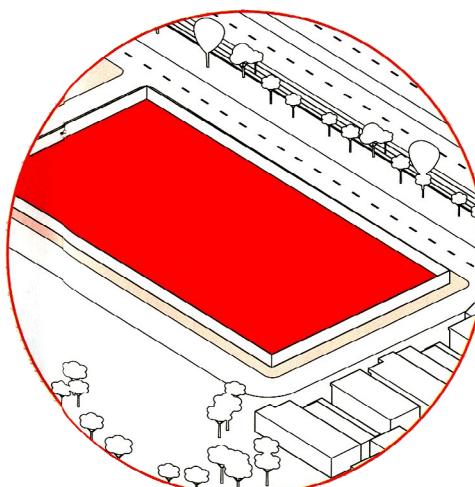
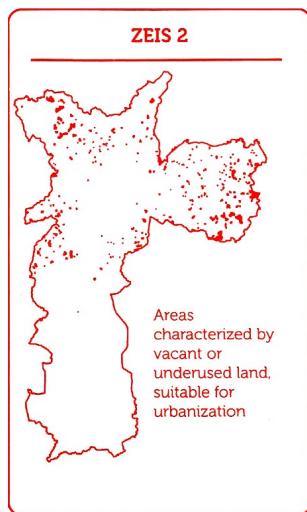
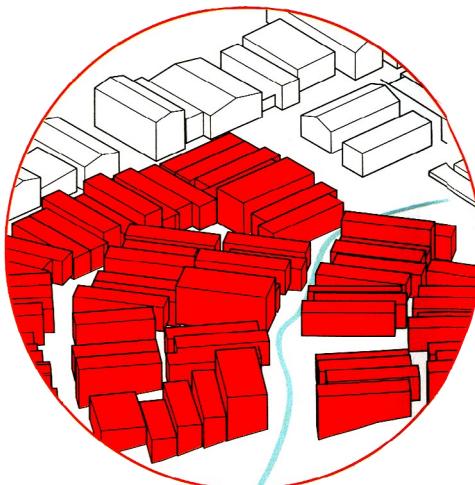
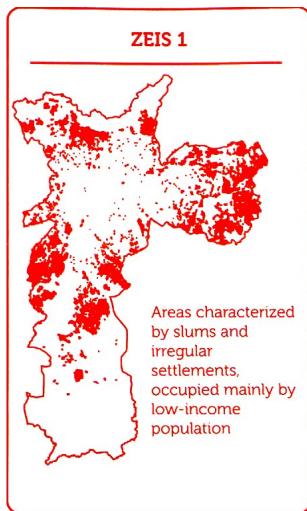
## Context

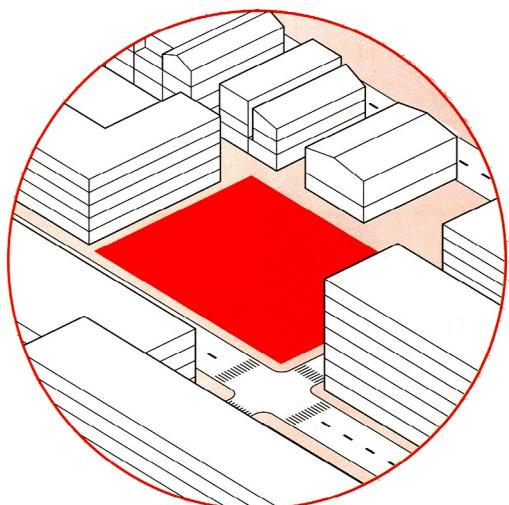
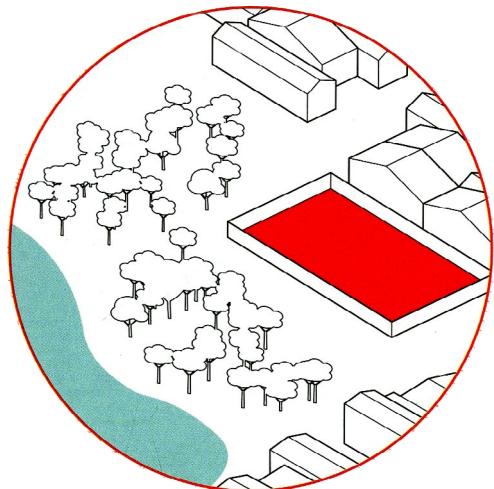
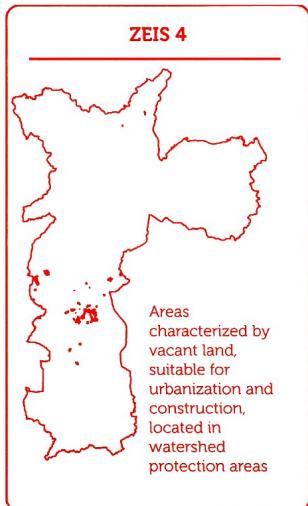
### History

Historically, Brazil had minimal state-owned land and a significant proportion of land was privately owned. During military rule and up until the 1988 Constitution, urban interventions at the federal level frequently neglected popular housing needs and the housing deficit was exacerbated over time and estimated at least 10 million units (Fernandes 1997, 3).

As cities in Brazil were urbanized, municipal and state government was virtually excluded from the control of land division, apart from the formal approval of plans and projects submitted by developers, leaving developers “to predetermine,

according to their own interests, the way they intended to divide the areas” (Fernandes 1997, 9). Often the best portions of state owned urbanized land was designated for industrial use while private developers owned most of the remainder, leaving little space for low-income residents, who were often placed in illegal and precarious situations (POLIS 2004). Intense speculation encouraged land hoarding by private landowners, leaving vacant plots throughout metropolitan areas as owners waited for land values to rise. Vacant lots created an inefficient, costly, segregated, and environmentally unfriendly pattern of development (Fernandes 1997, 1).





The diagrams above illustrate the criteria used to define each type of ZEIS.

*Illustrations from City of São Paulo Strategic Master Plan, 2014, 4-5.*

### **Who initiates, develops, and monitors the entire process?**

Legally registered neighborhood associations are allowed to request the transformation of the areas they represent into a ZEIS. To begin the process, communities form a Commission for Legalization and Urbanization - COMUL (Art. 6), and elect two representatives who are responsible for negotiating with municipal government officials and making decisions in the best interests of the community over the course of two years. In addition to the two community representatives, each COMUL includes one representative from URB10, one representative from the municipal or state government agency in charge of the implementation of land development and legalization projects, and one representative of the non-governmental agency working with the neighborhood association.

After the first year of negotiations between COMULs, the ZEIS popular movement realized the necessity for a forum where all the participants of the process could discuss common problems and solutions and created the FORUM of PREZEIS (Art. 36). While COMULs center around more specific community issues, the FORUM addresses broader challenges such as the funding allocation for urbanization projects, speeding up bureaucratic procedures to institutionalize COMULs, and monitoring government spending and action (Brazilian Research Report 19-21).

### **Case Study: Recife**

"The first ZEIS property experience occurred in the city of Recife (1.3 million inhabitants) in the 1980s" (POLIS 2004). Supported by the Commission of Justice and Peace of the Archdiocese of Olinda and Recife, a bill was passed that regulated ZEIS and provided participatory management mechanisms for conducting urban recovery projects, legal settlement, and forms processing requests in locations still not characterized as ZEIS. The law also introduced protective mechanisms against speculative market shares; established minimum lot sizes; and prohibited remembramentos, or the consolidation of several neighboring lots into one bigger lot.

In 1993, the PREZEIS law and fund was approved by the City Council, with 1.2% of tax revenue to be committed to the operation of ZEIS. ZEIS results were made possible in large part because neighborhood residents organized and became permanent partners of municipal urban policy. In addition to providing access to housing for the people involved, this process demonstrated improvements in municipal administration, as the government consulted the population and fulfilled its role as a mediator of urban land disputes (POLIS 2004).

## Key Questions Raised

- Despite legal efforts to preserve affordability in ZEIS areas for low-income populations, concerns remain that the regularization of ZEIS areas will raise living costs and displace residents, thus jeopardizing the primary objective of integration (Fenandes 2003, 9).

## Implications for Other Communities

- Through the establishment of ZEIS, local governments acknowledge the right of favela dwellers to have access to urban land and housing, as well as the state's obligation to upgrade favelas (Budny 2007, 5).
- Legally, ZEIS allows municipal authorities to use instruments such as the prescription and granting of right of use and to facilitate the land regularization of the settlements.
- Recognizing favela dwellers as the subjects of rights has helped establish the initial foundations of socially oriented and participatory urban planning. Historically, ZEIS have worked better when neighborhood residents participate in the negotiations on regulatory and investment decisions. The process has also been improved by more open and democratic negotiations with real estate developers (Budny 2007, 4).
- Investments in infrastructure and urban services to support higher densities have been shown to generate increases in land values, thus increasing the municipal tax base (LILP 2013, 4).
- While the increase in land values caused by ZEIS is helpful to cities, it can lead to gentrification and displacement of low-income populations.
- Environmental results of ZEIS include improved built environment for residents and reduced risk of damage from habitation in risky areas prone to landslides or floods.
- However, the program can be interpreted as institutionalizing lower standards for those with the fewest resources (Budny 2007, 3).

## Case Study: Livable Neighborhoods Code, Perth, Australia

### Overview and Context

The Western Australian Planning Commission (WAPC) created the Livable Neighborhoods Code in an effort to guide sustainable development and reduce urban sprawl in Western Australia. The guidelines aim to produce more efficient, sustainable, and appealing developments outside of urban centers. According to the State of Western Australia, “Livable neighborhoods has been prepared to implement the objectives of the State Planning Strategy which aims to guide the sustainable development of Western Australia to 2029. Livable Neighborhoods operates as a development control policy, or code, to facilitate the development of sustainable communities” (State of Western Australia 2007, 1).

The Livable Neighborhoods Code in Western Australia and in the Perth Metropolitan Region in particular was preceded by several efforts in other areas of Australia, including the Victorian Code for Residential Development (1992) and a Ministerial Directive to achieve 15 residential lots per hectare in South East Queensland and New South Wales (Lumb et al. 2000).

At the start of the Livable Neighborhoods initiative, the Perth Metropolitan Region had a population of approximately 1.4 million, relatively low-density residential development (about six dwellings per hectare (WAPC, 2003), and a history of urban sprawl, making it a fitting test site for the new code.

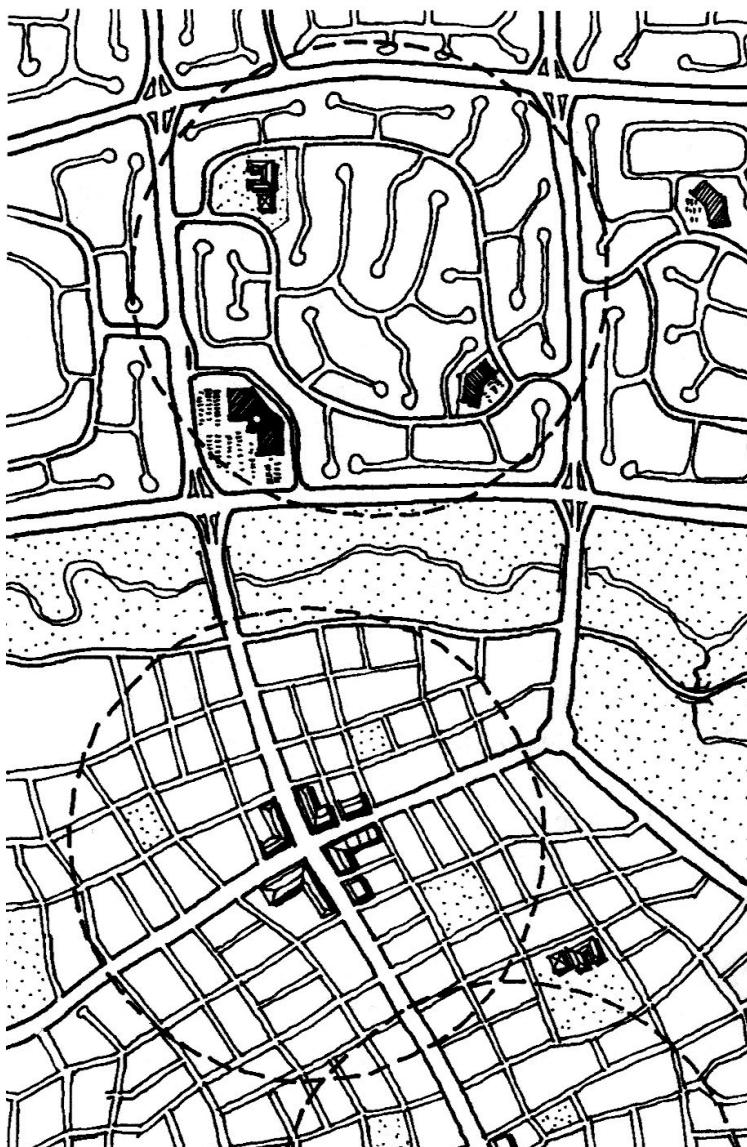
The state had an overarching goal of guiding sustainable development and also held a strong

influence over the land market. While Western Australia as a whole was working to provide adequate access to education and community services, create a stable economic base, and retain environmental quality, Perth in particular was struggling to keep up with the high cost of service provision in an rapidly expanding area. Perth also struggled with “the need for greater housing affordability, concerns about safety and security, a desire for greater social, economic, and environmental sustainability, the need for more locally-based jobs and the ability to provide public transport more efficiently” (State of Western Australia 2007, 4). Within Western Australia, the plan was to be implemented in metropolitan and country residential areas, on greenfield and urban infill sites (State of Western Australia 2007, 2).

### Project History and Current Issues

The Australian Department for Planning and Infrastructure (DPI) amended the Australian Model Code for Residential Development 1995, a “national reference document for residential developments,” in order to create the Livable Neighborhoods (State of Western Australia 2007, 3). Although the code offers guidance, it is not mandatory for developers or planners to utilize, nor did the state properly incentivize developers to comply.

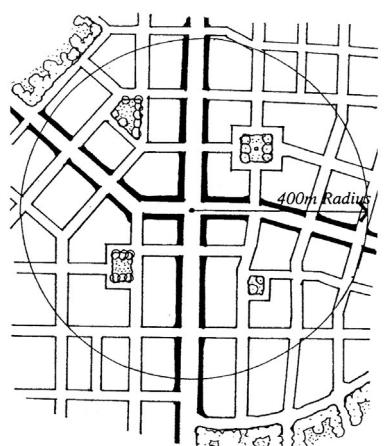
The first edition of the Livable Neighborhoods (LN) Code was published late in 1997 and a 12-month trial ensued whereby developers and their designers could choose to adopt the Code as an alternative to traditional subdivision practices on large greenfield sites (Curtis and Punter 2004,



Left: The diagram illustrates difference in urban form between a conventional planning code and The Community Design Code.

*Illustrations from Livable Neighborhoods Community Design Code 1997, 19.*

Right: Neighborhood unit based on a walking distance of 5 minutes to the center.  
*Illustrations from Livable Neighborhoods Community Design Code 1997, 21.*



38). The code offered illustrations, analyses, and guidelines to assist with subdivision development applications from large-scale to small-lot (Curtis and Punter 2004, 40), and conceived of the neighborhood as a site and device to promote sustainable development (Curtis and Punter 2004, 33). Assessment criteria include community design (site context and analysis), movement network, lot layout, public parkland, urban water management and utilities, each with separate objectives and quantitative and qualitative requirements (Curtis and Punter 2004, 40).

## Outcomes

Because of Perth's history of low-density development, the code did not set specific density targets, but promoted the development of more diverse lot sizes instead. (Curtis and Punter 2004, 49). Although the development of multiple housing units and apartments has proven successful in inner-city redevelopment areas, or coastal harbours or marinas, it has remained a risky prospect for developers at the suburban fringe (Curtis and Punter 2004, 50). The first edition of the code encouraged the development of smaller retail but has met limited success as of 2004, thus undermining the walkability objective of the LN Code (Curtis and Punter 2004, 53).

The Code sought to create 1.4 jobs per resident household to reduce commuting and increase the self-containment of development in suburbs through business and home-based business development methods. This has proven to be an optimistic projection, explained here by Curtis and Punter: "...this seems very optimistic unless significant large-scale employers can be attracted to adjacent business, distributional or industrial areas" (Curtis and Punter 2004, 53).

In general, developers have readily accepted road layout initiatives such as cyclist and pedestrian-friendly design, additional landscaping,

interconnected roadways, spine roads through neighborhood centers, and street facing lots. Developers were ultimately less accommodating to the decrease in cul-de-sacs, which were in demand from homebuyers.

## Key Questions Raised

- Can sustainable residential development patterns be effectively encouraged through planning controls and codes?
- Can community design be altered by a code that is not mandatory? What kinds of incentives work and which don't?
- Is the neighborhood the proper scale at which to target sustainable design?
- Can a general code with a "broad brush" effectively implement sustainable development in a metropolitan region?
- How can housing developers best be prepared and incentivized to build sustainably?

## Implications for Other Communities

- The code has not been widely adopted because it is seen as overly complex by developers and not in sync with the local market (Curtis and Punter 2004, 46)
- Evaluative studies have been conducted to determine the effect of the Livable Neighborhoods Code on healthy outcomes like walking; however many of them believe insufficient time has been allowed to note the effects of the new code. So far, there has not been a significant relationship (Hayley 2013, 1219).
- This project is being used as a live test of whether planning at the neighborhood level can promote healthier, more equitable, more accessible and biodiverse, and more civic forms of development. For these reasons it is worth refining it (Curtis and Punter 2004, 33).

## Case Studies: Choice Neighborhoods, USA



### Overview

Choice Neighborhoods (or Choice) is a program administered by the U.S. Department of Housing and Urban Development (HUD) that targets severely distressed public or HUD-assisted housing and surrounding neighborhoods. While public housing is owned by governments, HUD-assisted housing consists of rental housing for low- and moderate-income households that is owned and developed by for-profit and nonprofit corporations, receiving subsidies through various HUD programs, (Pendall and Hendey 2013, 1-12).

The Choice program defines severely distressed housing as that which: “requires major redesign, reconstruction, or redevelopment,” significantly contributes to the physical decline and disinvestment in the surrounding neighborhood, and “cannot be revitalized through assistance from other programs” (HUD 2014c, 11; HUD 2014d, 11). Severely distressed housing is occupied primarily by low-income families, suffers from vandalism and high crime rates, or lacks sufficient services such as transportation, schools, or support services (HUD 2014c, 11; HUD 2014d, 11).

Choice housing in Yessler Terrace project in Seattle, United States.

*Photo: Collection of Ann Forsyth*

In Choice-eligible neighborhoods, at least 20% of households must be extremely low income. In addition, one of the following characteristics should be present: high crime; high rates of vacancy or substandard homes; or inadequate schools (HUD 2014c, 13; HUD 2014d, 14). Eligible neighborhoods should be larger than the footprint of the target housing but typically smaller than two miles in diameter (HUD 2014d, 7). Applicants identify their target redevelopment site and define the extent of the surrounding neighborhood. Eligible applicants for Choice Neighborhoods planning grants include PHAs, local governments, nonprofit entities, and tribal entities. For-profit entities are also eligible for implementation grants. In the case of implementation grants, a local government unit must be either an applicant or co-applicant (HUD 2014c, 13).

## History and Key Players

Federal housing policies were first launched in the U.S. in the 1930s, supporting mortgage insurance, public housing, and housing assistance. The majority of the 1.5 million public housing units built since the 1930s are still in use today. Over time physical deterioration and social distress in the most derelict developments became notorious (Pendall and Hendey 2013, 1-1).

In 1992, the National Commission on Severely Distressed Public Housing, established by Congress, released a report indicating that 86,000 units (6% of the public housing stock) was severely distressed (The National Commission on Severely Distressed Public Housing 1992, 2). The most severely distressed developments were characterized by: “residents living in despair and generally needing high levels of social and support services;” “physically deteriorating buildings;” and, “economically and socially distressed public buildings” (The National Commission on Severely Distressed Public Housing 1992,

3). Developments suffered from crime, obsolete mechanical systems, and high vacancy rates. Inadequate federal funding and inefficient management by housing agencies undermined maintenance and security measures in public housing (Popkin et al. 2004, 9-10). Social services and economic development opportunities were often forgotten in favor of a focus on the physical condition (The National Commission on Severely Distressed Public Housing 1992, 3-4). Notably, public housing residents were primarily low-income and minority women and children facing extreme racial and economic segregation, living in neighborhoods without access to transportation or job opportunities (Popkin et al. 2004, 8).

Following the Commission’s recommendations, the Department of Veterans Affairs and HUD created the Urban Revitalization Demonstration, later called Hope VI, of which Choice was a successor program (HUD 2014a). Hope VI emphasized the need to de-concentrate poverty by relocating public housing residents and by building mixed-income developments (Popkin et al. 2004, 14). Public Housing Authorities (PHAs) received more than \$6.3 billion (in current dollars) through Hope VI (Pendall and Hendey 2013, 1-2 and 1-3). The program allowed PHAs to spend up to 15% of funding on community and supportive services, and involved partnerships between PHAs, city and county governments, and private-sector builders, property managers, and investors (Pendall and Hendey 2013, 1-3 and 1-4). Hope VI was criticized for reducing the total number of public housing units, failing to target the most severely distressed housing, inadequately engaging residents, displacing residents, failing to incorporate innovative design and effective services, with limited data to evaluate program outcomes (NHLP 2002, i-iii; Popkin et al. 2004, 3). However, not all projects had these negative side effects and some revitalized neighborhoods in positive ways.

In 2010, HUD released the final round of Hope VI grants and launched Choice Neighborhoods as a successor (Pendall and Hendey 2013, 1-4). Key players and stakeholders in Choice Neighborhoods include HUD, PHAs, local governments, nonprofit entities, tribal entities, for-profit entities, residents of distressed housing, and other neighborhood residents. Like Hope VI, Choice relies on public-private partnerships for housing redevelopment.

For implementation grants, applicants are evaluated on a points system, based on the following criteria (HUD 2014c, 58). Planning grant applications are evaluated on a similar but less detailed point scale (HUD 2014d, 40). Issues include capacity of the project team, needs, neighborhood strategy, housing strategy, proposed services, and the soundness and feasibility of the approach.

Choice Neighborhoods differs from Hope VI in that it: “extends eligibility to privately owned, federally subsidized developments,” requires one-for-one unit replacement, and places greater emphasis on neighborhood revitalization (Pendall and Hendey 2013, 1-1) though a focus on three levels of impact: housing, people, and neighborhood.

## Housing

Choice supports redevelopment of both public housing and private rental housing properties subsidized through HUD’s multifamily programs (Pendall and Hendey 2013, 1-12). The program prioritizes housing that is: “energy efficient, sustainable, accessible, and free from discrimination;” “mixed income;” that is “well-managed and financially viable” (HUD 2014c, 2).

Choice requires one-for-one replacement of assisted or affordable housing units, with new units expected within the indicated neighborhood

(Pendall and Hendey 2013, 1-13). The program also stipulates that: “lease-compliant tenants have the opportunity to return to the revitalized target development” (Pendall and Hendey 2013, 1-13). Some exceptions exist, such as: replacement of up to half of units with housing vouchers in metropolitan areas where the rental housing market is already oversupplied relative to demand.

## People

Like Hope VI, Choice requires strategies for community and supportive services, early childhood education, income mixing, community engagement, relocation plans, and fair housing (Pendall and Hendey 2013, 1-14). Choice differs from Hope VI in that it places particularly strong emphasis on improving K-12 education and looks to create services that will benefit the neighborhood at large, not just residents of the redevelopment project (Pendall and Hendey 2013, 1-14).

## Neighborhoods

A central goal of Choice is to: “transform neighborhoods of poverty into functioning, sustainable mixed-income neighborhoods with appropriate services, public assets, transportation and access to jobs, and schools” (Pendall and Hendey 2013, 1-15). Grantees can allocate up to 15% of funds for Critical Community Improvements (CCIs), such as development of transit or retail opportunities, and are required to designate a lead agency for implementation of neighborhood measures (Pendall and Hendey 2013, 1-15). Choice also focuses on public safety.

## Current Issues

In total, HUD has now awarded 38 Choice planning grants and 8 implementation grants (HUD, 2014b). Planning grant applications from the first three years of Choice (FY 2010, 2011, and

2012) indicate that targeted neighborhoods vary substantially in physical size, number of housing units, and land, but have median household income below the city average (Gebhardt 2014, 8).

### Key Questions Raised

- Which kinds of projects maximize spillover effects from Choice? For example, is it better to direct funds to areas where revitalization efforts and increased investment are already occurring? Or, would changes in these areas have been just as substantial without Choice?
- What metrics should be used to evaluate the success of Choice Neighborhoods?
- What are best practices for delineating neighborhood boundaries? Is the flexibility Choice allows in choosing neighborhood boundaries advantageous to advancing the goals of the program?
- Which mechanisms and entities most effectively facilitate program coordination, public-private partnerships, and leverage?
- Do the Choice Neighborhoods projects adequately address the needs of vulnerable populations?
- Do the Choice Neighborhoods projects lead to increased population density?
- How effective are place-based strategies in improving services like education quality?

### Implications for Other Communities

- Government funding may constitute a small portion of the total anticipated budget for redevelopment efforts; thus, an important consideration in housing and neighborhood revitalization is how to leverage additional funding and coordinate the many actors involved in public-private partnerships.
- Housing redevelopment can create substantial spillover effects, particularly in areas where revitalization efforts and increased investment are already occurring; however, policy makers should consider

at length which characteristics define a promising project site. Policy makers should also consider the appropriate scales for target housing sites and neighborhoods, as well as whether redevelopment programs should include private housing, like Choice Neighborhoods does.

- More fundamentally, there is the question of whether it is best to target neighborhoods where revitalization efforts are underway if this focus may effectively skip over the most distressed developments.
- Programs that seek to improve housing, people, and neighborhoods may take on a wide breadth of challenges beyond housing redevelopment, from enhancing education to improving public safety or providing additional services and facilities, like transportation infrastructure and grocery stores.

## Case Study: BOSCO Sustainable Community, Regional Single-family Housing *Vivienda Unifamiliar Regional (INFONAVIT)*, Hermosillo, Mexico



### Overview

The BOSCO project shows an innovative design for low-rise, high-density housing in Mexico. The idea for the project started in 2014 after the International Forum for Sustainable Housing (Foro International de Vivienda Sustentable, FIVS), organized by INFONAVIT, where a group of architects presented proposals for single-family housing developments adapted to the regional conditions of each state in the country. The exhibition titled “Regional single-family housing: 32 states, 32 architects, 32 proposals” (“Vivienda Unifamiliar Regional: 32 entidades, 32 arquitectos, 32 propuestas”) reflected on the challenges and opportunities of adapting social housing to the social, cultural, and environmental contexts of the different regions in Mexico (Arquine 2015).

One of these proposals, developed by the Mexican architecture firm TAX, led by the architect Alberto Kalach, caught the attention of a regional social housing developer based in the state of Sonora. The developer, Desarrollos Derex, enthusiastic about the idea of developing

Front view of housing units in BOSCO development, Hermosillo, Mexico.  
Source: Derex Desarrollos



Aerial view of the BOSCO development in Hermosillo, Mexico. The map to the left shows the location of the project in the CONAVI boundaries in the city.

*Source: Derex Desarrollos*

innovative projects, was interested in determining if these new models would be financially feasible and if they would be accepted by the local consumers.

After an intense design process and revisions with the architects, the developer, and INFONAVIT, the BOSCO development materialized as an intra-urban project with a density that exceeds the typical parameters in these type of developments. In addition, through close attention to design and constant cost efficiency revisions, the price of the units were more affordable than the neighboring competition.

## Context

Since the early 2000s the Mexican housing sector experienced accelerated growth, especially in the social housing segment. Even though this growth has become an important motor of the national economy, it has also prompted a mass production system that often ignores the specificities of the local context such as topography, climate, materials, culture, and lifestyle.

Recognizing that the greatest challenge is not only to provide mortgages for workers but also to provide quality of life, INFONAVIT has been developing strategies to ensure that houses are adapted to local characteristics. To achieve these aims, the Sustainability Department (Subdirección General de Sustentabilidad) at INFONAVIT has been responsible for coordinating with developers, architects, and local authorities to materialize innovative projects such as BOSCO.

At the same time, in the case of BOSCO, the developer has played a crucial part in the process. For instance, Derex participated in 2009 in the NAMA program, a research collaboration between the Mexican and German governments, to analyze materials and construction systems to reduce CO<sub>2</sub> emissions and energy consumption in the homebuilding process.

## Project History and Current Issues

The main challenge was to ensure that affordable social housing could be built in a well-located area, despite higher land costs. To address this



BOSCO units (shown below) have 48% more interior space than the previous models built by the developer (shown above). Similarly, the BOSCO development is better located, closer to urban amenities than other development built by the developer.

*Source: Derex Desarrollos*

issue, the developer knew that changes in the local permits to allow more density and design strategies would be key to keep prices low without compromising quality.

The prototype proposed by TAX was able to accommodate 120 units per hectare, a density greater than the typical density in these types of developments, roughly 100 units per hectare, and more than what the developer had already achieved in a neighboring site (80 units per hectare).

Another objective of the project was to maximize the interior space and offer a parking spot with each house. The developer advocated these requirements based on their experience in the city and certainty that the project would not be commercially attractive without these characteristics.

In terms of the size of the unit, the new prototype achieved 73 square meters. This exceeds the size of other similar products by the developer, averaging 49 square meters. A remarkable 48% increase in the interior size was achieved with a minimal price difference. The use of local materials and innovative construction systems kept prices down.

As of February 2016, the developer reported that sales have been very positive, and they expect to replicate this project in other cities. Even though the project involved a strong commitment from multiple actors, an

intense review period, and trial and error process, its example demonstrates that it is nonetheless possible to build affordable social housing that is well located, dense, well serviced, adapted to local contexts, and still financially feasible for the developer.

The graph shows a comparative analysis of the unit size, price, and location of the products that the developer offers. It is clear that BOSCO offers the best price-product ratio without compromising location, construction quality, or urban amenities.

### Key Questions Raised

- What strategies can be used to incentivize other developers to develop projects like BOSCO?
- How can other institutions and actors collaborate on these types of developments?
- How can neighboring communities and

users participate in the design process?

- How can these developments be reproduced in other areas of Mexico?

### Implications for Other Communities

Projects like BOSCO are important because they provide an example that it is indeed possible to do sustainable projects, in good locations, and be financially successful.

As Mexico is a very diverse country, it is essential that housing design and production be based in the realities of the local context. Adapting to these particularities will ensure the long term quality of life for the residents.

During the design process, flexibility can be built in to determine the density adequate for the local context.

CITY NOGALES				
PRODUCT	POLIGON	SQM	LOCATION	HOUSING PRICE PER SQM
A	DUIS	46	4	5,869
A	DUIS	51	4	5,890
A	U3	49	3	6,655
B3	U2	62	2	7,729
MEDIA	U1	70	1	9,094

CITY Tijuana				
PRODUCT	POLIGON	SQM	LOCATION	HOUSING PRICE PER SQM
A	U3	51	3	6,786
B1	U3	60	3	7,181
B1	U3	59	3	7,743
MEDIA	U2	61	2	11,637

CITY HERMOSILLO				
PRODUCT	POLIGON	SQM	LOCATION	HOUSING PRICE PER SQM
A	U2	49	2	7,996
B2	U3	70	3	7,470
MEDIA	U3	88	3	6,809
MEDIA	U1	88	1	8,848

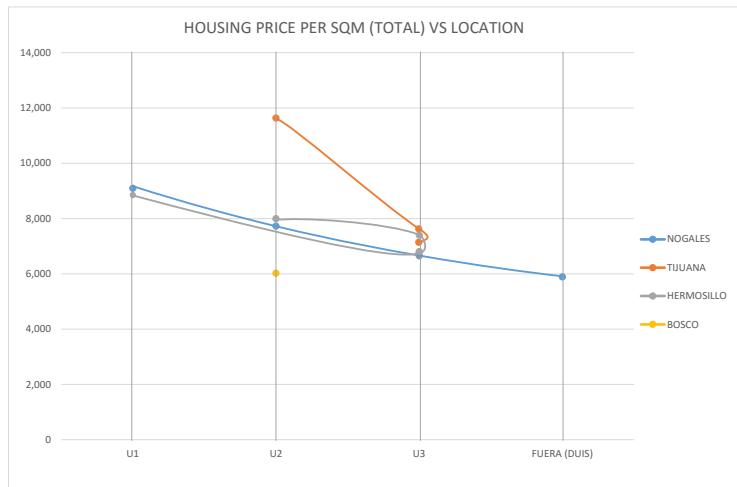
  

CITY	BOSCO			
A	U2	73	2	6,027

\*More housing units

\*Include parking space and green roof

\*NAMA efficiency level B

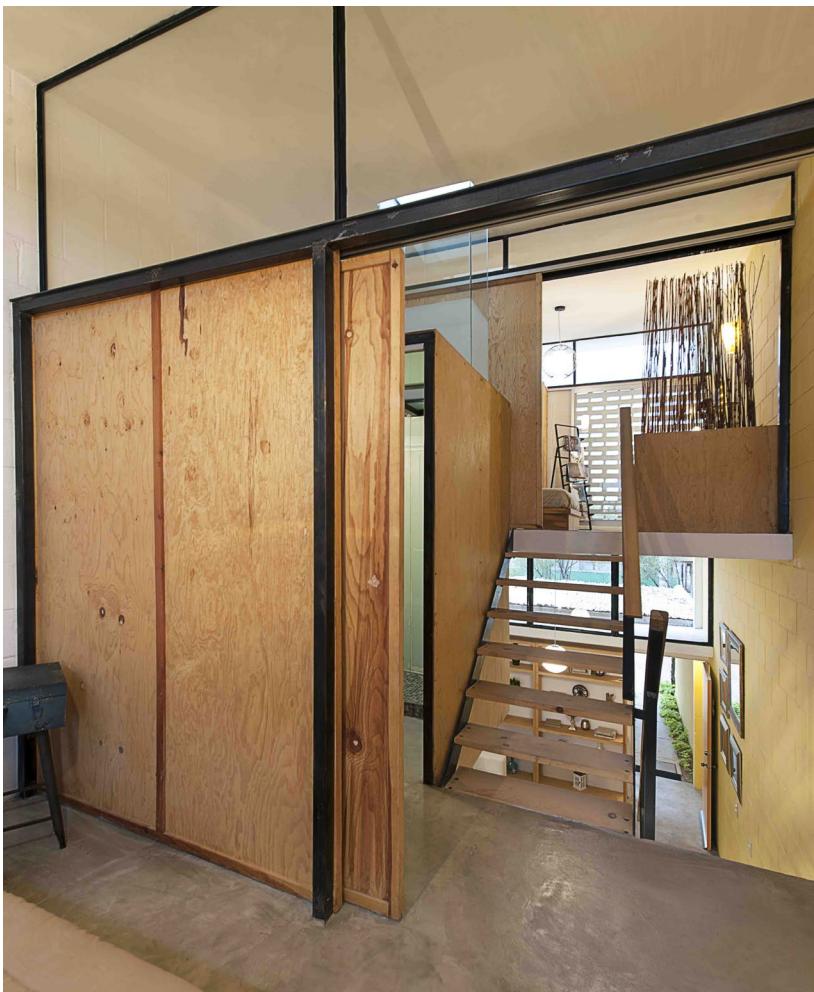


Cost analysis of different developments built by Derex Desarrollos. The graph shows that compared to other products of the developer, despite land costs, the BOSCO development achieved a lower price per unit and a larger unit size.

Source: Derex Desarrollos



Floor plans of a BOSCO unit and view from the backyard.  
Source: Derex Desarrollos



Interior view of a BOSCO housing unit.  
Source: Derex Desarrollos

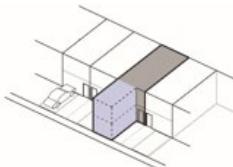
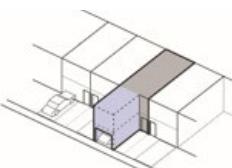
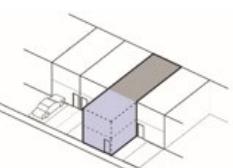
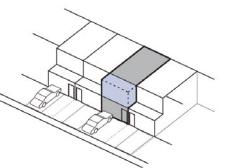
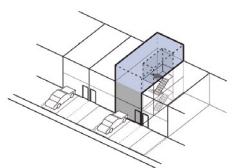
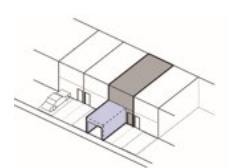
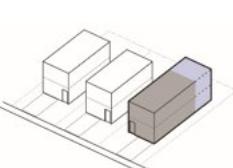
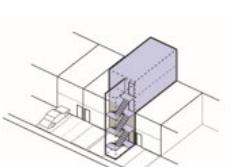
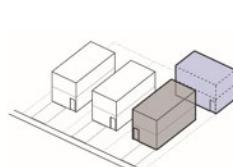


## Appendix E

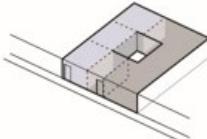
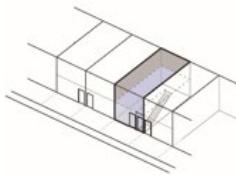
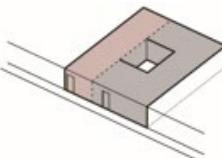
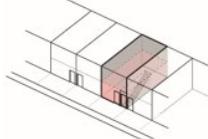
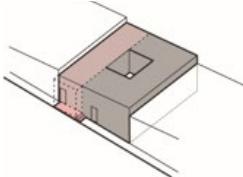
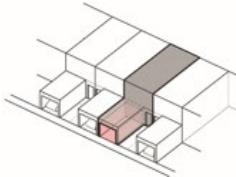
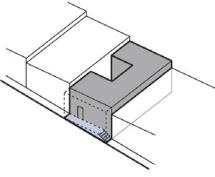
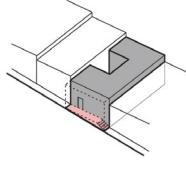
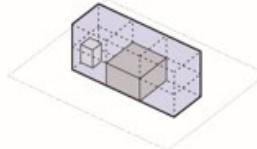
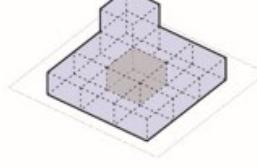
### Retrofit and Densification Strategies in Mexico

Based on observations of residential developments across Mexico, Appendix E describes strategies for densifying residential units. The material assesses and classifies how Mexican households currently transform their homes through informal construction methods to accommodate change in family structures or economic needs.

**Table E.1 Strategies for densifying residential units and current upgrading practices in Mexico**

	Enclosure of exterior spaces within the lot for residential purposes		Expansion of interior spaces through partial build-out of front façade
	Expansion of interior spaces through partial build-out of front façade		Expansion of interior spaces through full build-out of front façade
	Expansion of interior spaces through infill of the existing residential structure		Expansion of interior spaces by building a new structure over the existing residential structure
	Expansion of interior spaces by building a new structure on the front façade		Expansion of interior spaces by building a new structure on the rear façade
	Introduce new independent dwelling units in the lot by building a new structure over the existing residential structure		Introduce new independent dwelling units in the lot by building a new structure in the backyard

**Table E.1 Strategies for densifying residential units and current upgrading practices in Mexico (continued)**

	Transform a single family unit into a boarding house by subdividing the existing structure		Subdivide a single family unit to accommodate an additional residential unit within the same structure
	Subdivide a residential building to accommodate commercial uses		Transform the ground level of a residential building to accommodate commercial or industrial uses
	Subdivide a residential building to accommodate commercial uses and expand commercial activities to the sidewalk		Transform the ground level of a residential building to accommodate commercial or industrial uses
	Expansion of interior spaces by creating a new structure over the sidewalk		Introduce a space for commercial activities by creating a new structure over the sidewalk
	Incremental growth of the residential structure through self-build construction. During the first stage, the sanitary and bedroom spaces are built as independent structures		Incremental growth of the residential structure through self-build construction

Adapted from Ward, P. M. 2015; Sánchez Corral, J. 2012. Diagrams by Irene Figueroa-Ortiz.



## Appendix F

### Data: Territorial Reserves Preliminary Assessment

Appendix F presents an analysis of the composition of territorial reserves registered in the National Housing Registry (RUV). It shows that relatively few land reserves are available in existing urban areas and thus at least some of the projected demand for new housing will be met in greenfield sites (U3).

Started in 2013, this registry allows CONAVI to determine the financial support available to developers, according to the rules of operation of the urban containment boundaries (PCUs). It is important to note that in territorial reserves acquired before February 2013, when the new policies were established, housing also can be funded outside the U1, U2, U3. Therefore this analysis also includes R4-A, R-B, R-3, which are classifications that still receive funding. Local policy makers, analysts, and researchers have been concerned that the boundaries are actually not promoting urban consolidation as desired, as new developments continue to be built in peripheral areas with minimal access to public transportation, urban services, or economic opportunities. These challenges are analyzed briefly in Appendix F using *Registro Nacional de Reservas Territoriales* (RENARET) data, and in the corresponding governance report through interviews and research in selected metropolitan areas.

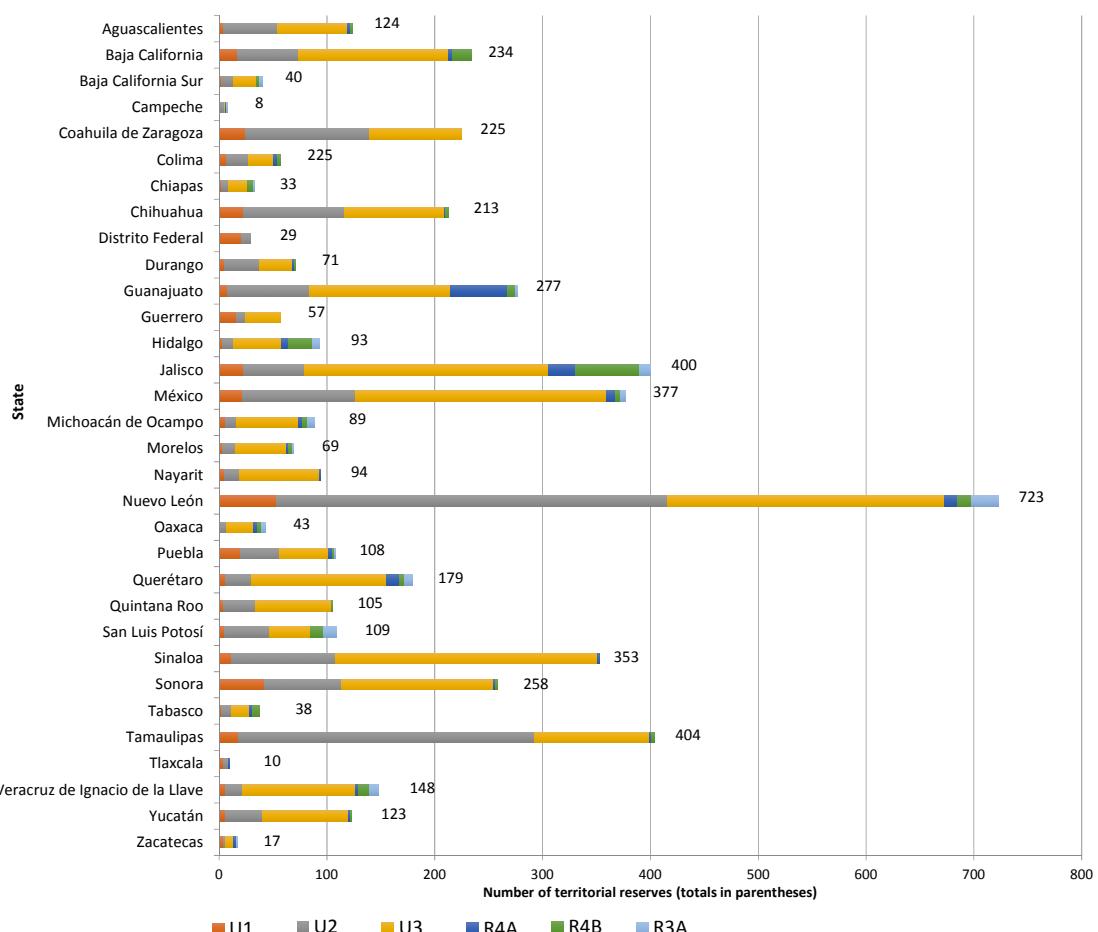
The classifications of the Urban Containment Boundaries that receive federal subsidy are as follows:

- **U1- Intraurban:** Defined with the variable of proximity to employment, defined as the physical distance to jobs in a given geographic unit.
- **U2 - First boundary or areas in the process of consolidation:** Areas with water and sewage service coverage greater than or equal to 75%.
- **U3 - Second boundary or contiguous urban areas:** These areas are located next to U2s in a buffer defined according to the size of the city.
- **R1:** Reserve acquired without residential land use.
- **R2:** Reserve acquired with residential land use.
- **R3:** Reserve acquired with residential land use and existing infrastructure and urbanization investment.

- **R3A:** Areas that fall outside of the PCUs and have existing infrastructure and urbanization investment.
- **R4:** Reserve acquired with residential land use, urbanized, with built housing, or with housing under construction.
- **R4A:** Areas that fall outside of the PCUs and have urban or rural employment (measured by the quantity of employees greater than or equal to 250) and urban or rural housing (measured by the quantity of housing units greater than or equal to 500).
- **R4B:** Areas that fall outside of the PCUs and have urban or rural employment (measured by the quantity of employees less than 250) or urban or rural housing (measured by the quantity of housing units less than 500).

The graph below shows the distribution of number of territorial reserves registered by developers in each state. The reserves are classified by the type of urban containment boundary in which they are located. The PCUs included below are those that receive subsidy in some form.

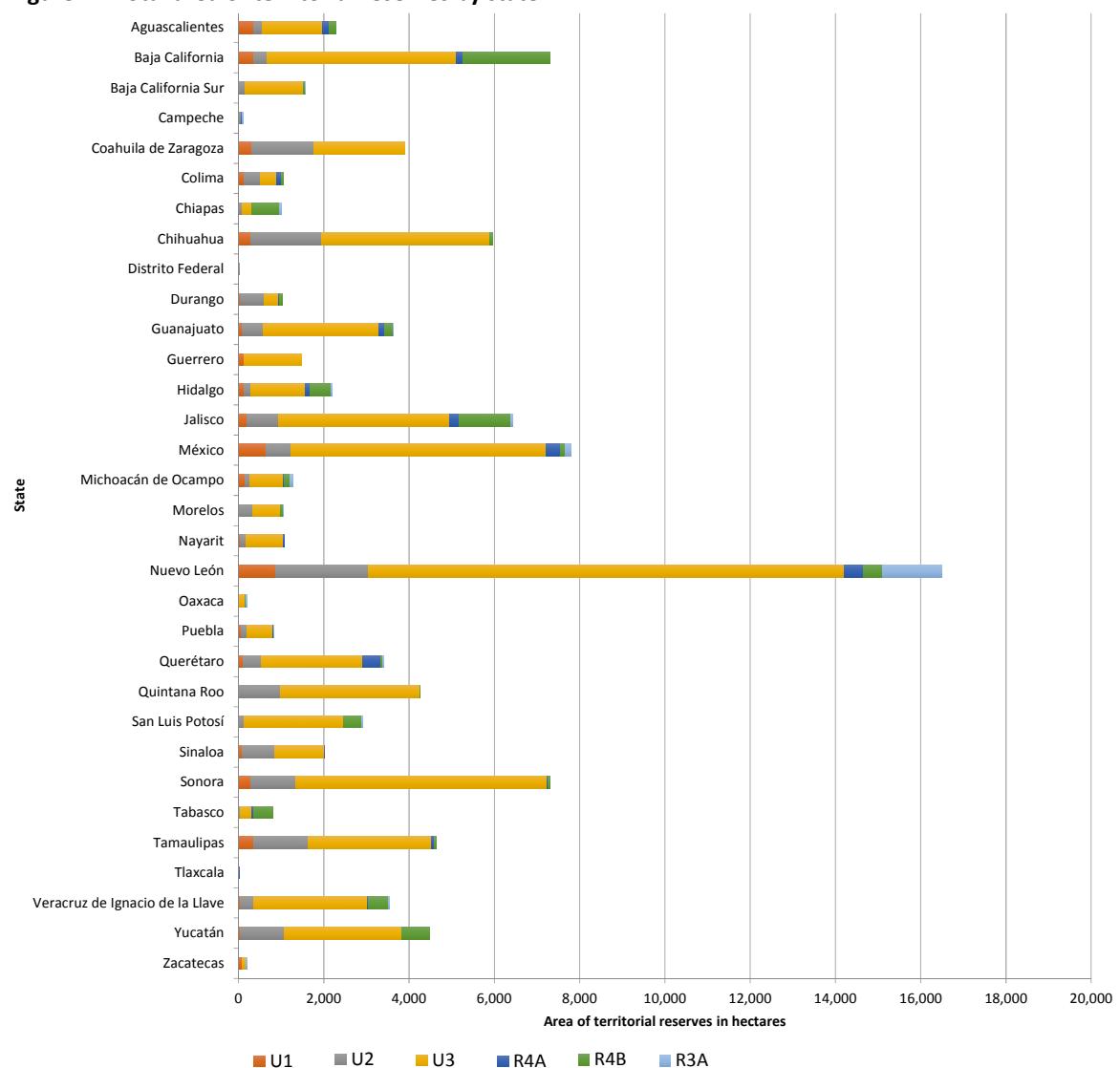
**Figure F.1 Number of territorial reserves that receive federal funding for housing by state**



Source: RUV, CONAVI, April 29, 2015.

The graph below shows the total area (measured in hectares) of territorial reserves registered by developers in each state. The reserves are classified by the type of urban containment boundary in which they are located. The PCUs included below are those that receive subsidy in some form.

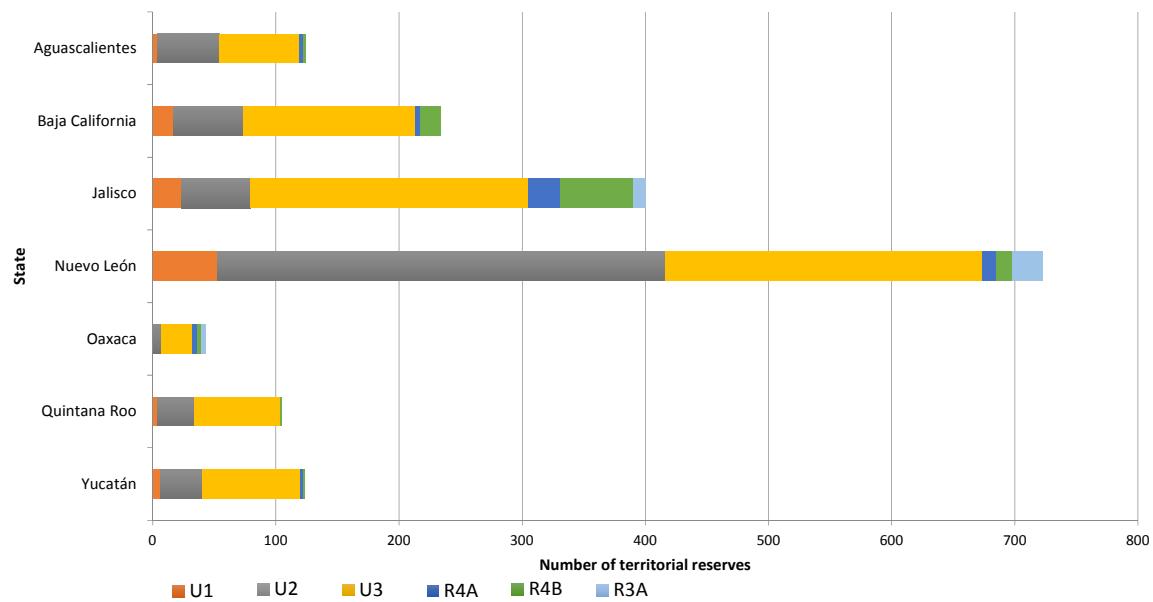
**Figure F.2 Total area of territorial reserves by state**



Source: RUV, CONAVI, April 29, 2015.

The graph below shows the number of territorial reserves registered by developers in each of the states in which research was conducted at the local level. The reserves are classified by the type of urban containment boundary in which they are located. The PCUs included below are those that receive subsidy in some form.

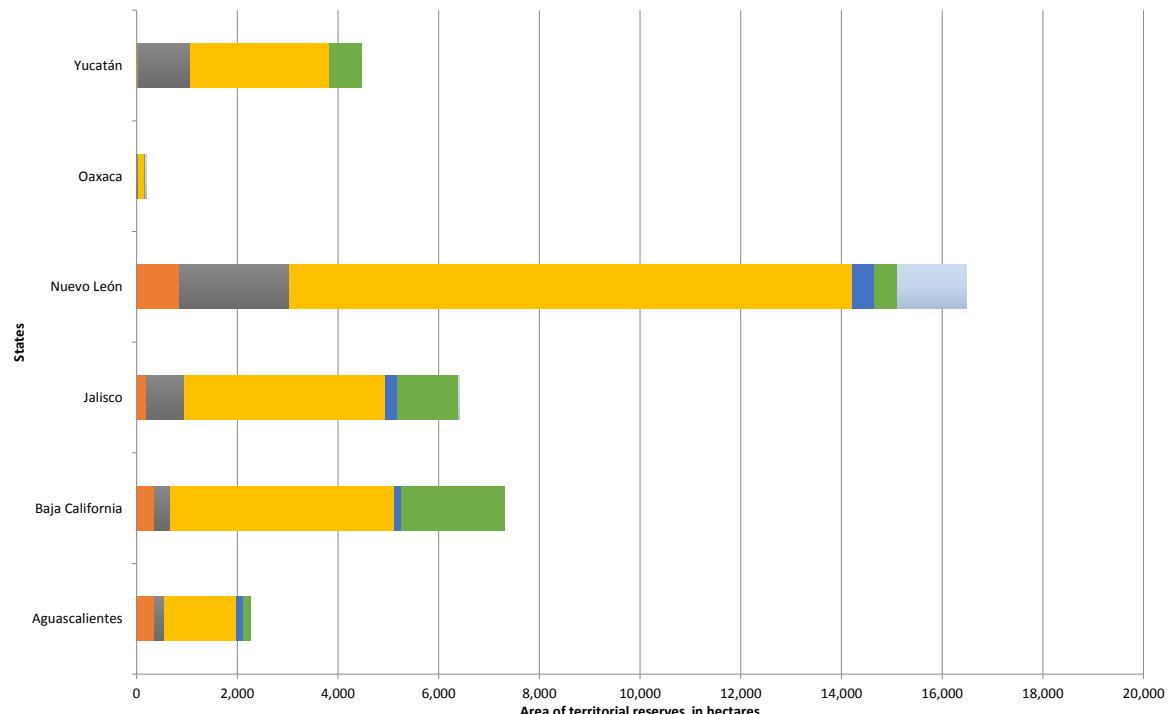
**Figure F.3 Number of territorial reserves that receive federal funding for housing in selected case studies**



Source: RUV, CONAVI, April 29, 2015.

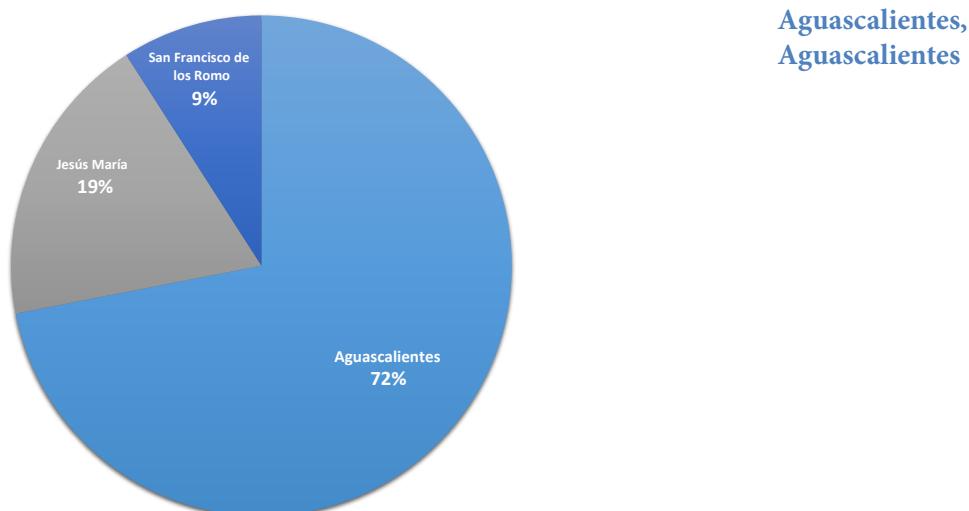
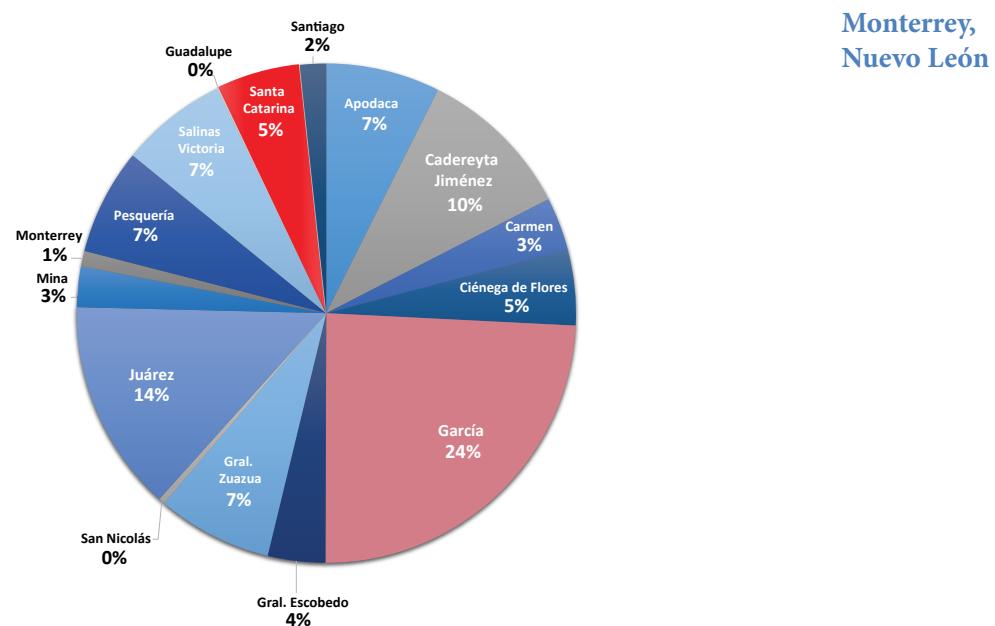
The graph below shows the total area of territorial reserves (measured in hectares) registered by developers in each of the states in which research was conducted at the local level. The reserves are classified by the type of urban containment boundary in which they are located. The PCUs included below are those that receive subsidy in some form.

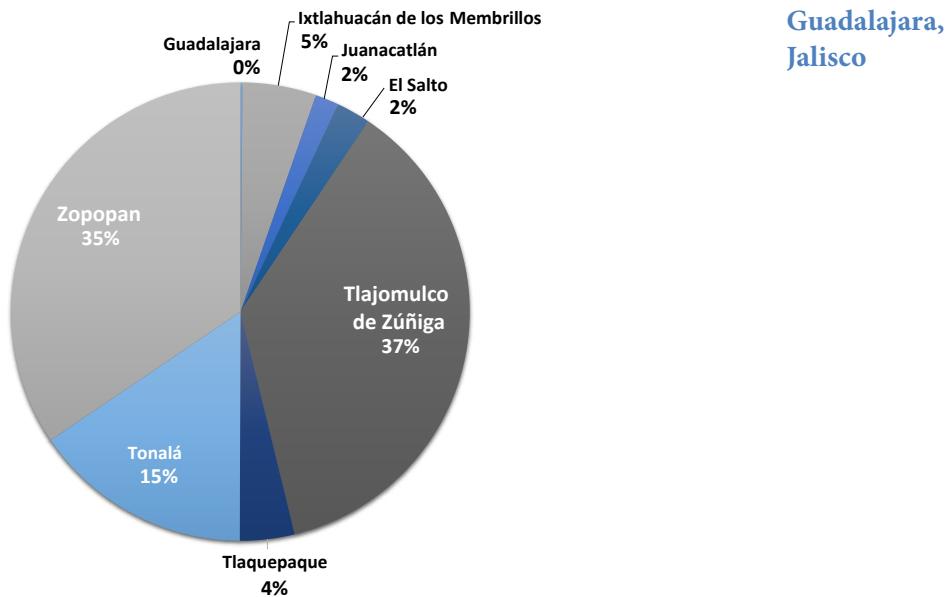
**Figure F.4 Total area of territorial reserves in selected case studies.**



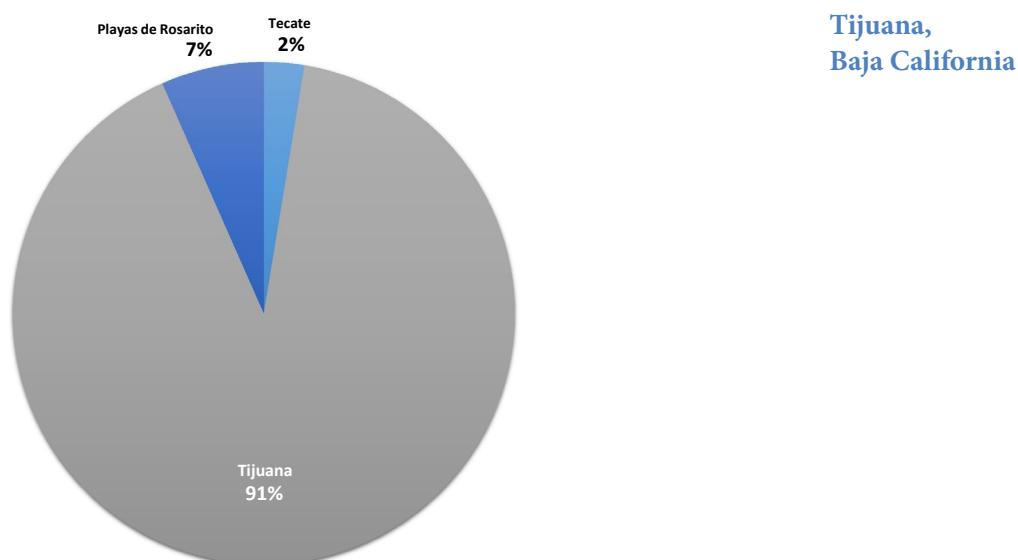
Source: RUV, CONAVI, April 29, 2015.

**Figure F.5 Percentage distribution of total area of territorial reserves by municipality in selected metro areas**

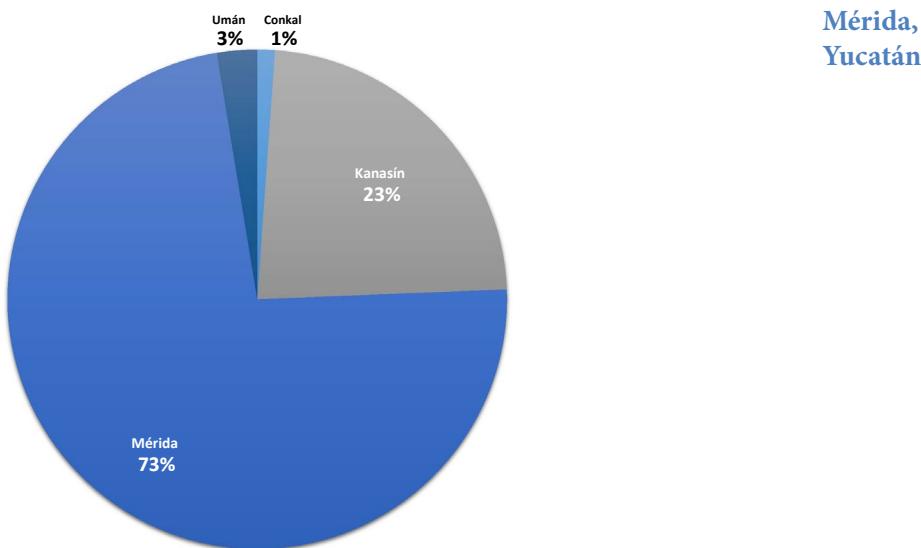




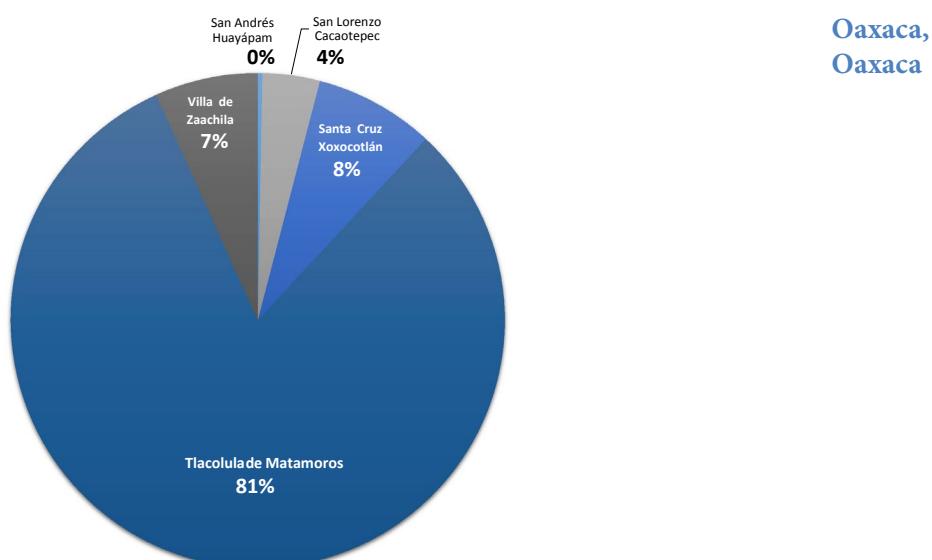
Guadalajara,  
Jalisco



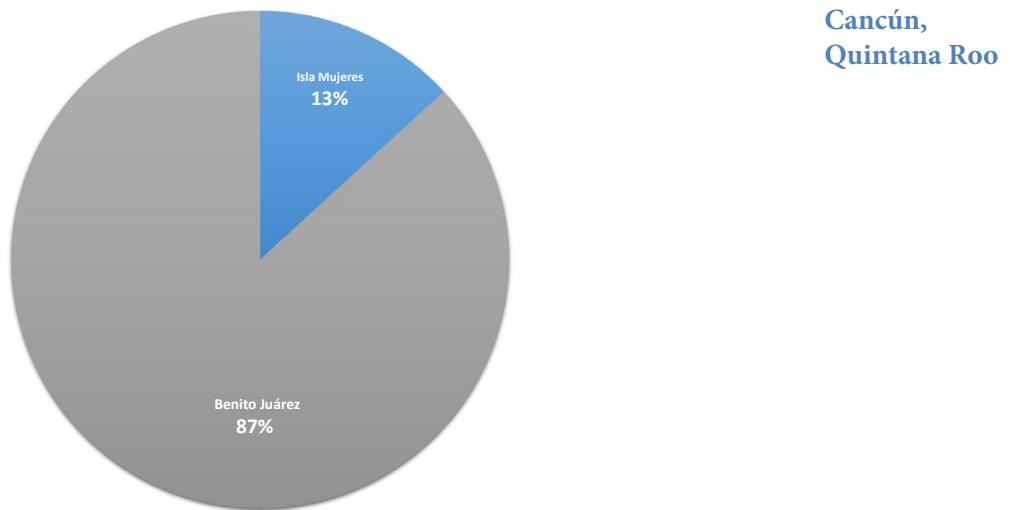
Tijuana,  
Baja California



Mérida,  
Yucatán



Oaxaca,  
Oaxaca



*Source: RUV, CONAVI, April 29, 2015.*



# Appendix G

## International Urban Sustainability Indicators Studies

**Table G.1 International urban sustainability indicators list**

Category	Indicators
En1 Geographically balanced settlement	<ul style="list-style-type: none"><li>• En1-1: Population growth</li><li>• En1-2: Planned settlements</li></ul>
En2 Freshwater	<ul style="list-style-type: none"><li>• En2-1: Proportion of total water resources used</li><li>• En2-2: Water use intensity by economic activity</li><li>• En2-3: Presence of fecal coliforms in freshwater</li><li>• En2-4: Biochemical oxygen demand in water bodies</li></ul>
En3 Wastewater	<ul style="list-style-type: none"><li>• En3-1: Percentage of city population served by wastewater collection</li><li>• En3-2: Percentage of wastewater receiving no/preliminary/secondary/tertiary treatment</li></ul>
En4 Quality of ambient air and atmosphere	<ul style="list-style-type: none"><li>• En4-1: Number of times the limit values for selected air pollutants are exceeded</li><li>• En4-2: Existence and level of implementation of air-quality management plan</li><li>• En4-3: Emissions of greenhouse gases</li><li>• En4-4: Consumption of ozone depleting substances</li></ul>
En5 Noise pollution	<ul style="list-style-type: none"><li>• En5-1: Share of population exposed to long-term high level of environmental noise</li><li>• En5-2: Noise levels in selected areas</li><li>• En5-3: Existence and level of implementation of a noise action plan</li></ul>
En6 Sustainable land use	<ul style="list-style-type: none"><li>• En6-1: Artificial surfaces as percentage of the total municipal area</li><li>• En6-2: Extent of derelict and contaminated land</li><li>• En6-3: Number of inhabitants per km<sup>2</sup></li><li>• En6-4: Quota of new edification taking place on virgin area and quota taking place on derelict and contaminated land in % per year</li><li>• En6-5: Restoration of urban land<ul style="list-style-type: none"><li>a) Renovation, conversion of derelict buildings</li><li>b) Redevelopment of derelict land for new urban uses</li><li>c) Cleansing of contaminated land</li></ul></li><li>• En6-6: Protected areas as percentage of total municipal area</li><li>• En6-7: Land affected by desertification</li><li>• En6-8: Area under organic farming</li><li>• En6-9: Proportion of land area covered by forests</li></ul>
En7 Waste generation and management	<ul style="list-style-type: none"><li>• En7-1: Percentage of city population with regular solid waste collection</li><li>• En7-2: Percentage of solid waste disposed to sanitary landfill/incinerated and burned openly/disposed to open dump/recycled/other</li><li>• En7-3: Total solid waste generation per capita</li><li>• En7-4: Generation of hazardous waste</li><li>• En7-5: Waste treatment and disposal</li><li>• En7-6: Management of radioactive waste</li></ul>

**Table G.1 International urban sustainability indicators list (continued)**

Category	Indicators
En8	Effective and environmentally sound transportation systems <ul style="list-style-type: none"> <li>• En8-1: Travel time</li> <li>• En8-2: Transport modes</li> <li>• En8-3: Energy intensity of transport</li> </ul>
En9	Mechanism to prepare and implement environmental plans <ul style="list-style-type: none"> <li>• En9-1: Local environmental plan</li> <li>• En9-2: Latest approval date of Master Plan</li> </ul>
En10	Biodiversity <ul style="list-style-type: none"> <li>• En10-1: Proportion of terrestrial area protected</li> <li>• En10-2: Management effectiveness of protected areas</li> <li>• En10-3: Area of selected key ecosystems</li> <li>• En10-4: Fragmentation of habitats</li> <li>• En10-5 Change in threat status of species</li> <li>• En10-6: Abundance of invasive alien species</li> </ul>
Ec1	Consumption and production patterns <ul style="list-style-type: none"> <li>• Ec1-1: Material consumption</li> <li>• Ec1-2: Material intensity of the economy</li> <li>• En1-3: Domestic material consumption</li> <li>• En1-4: Annual energy consumption, total and by user category</li> <li>• Ec1-5: Share of renewable energy sources in total energy use</li> <li>• Ec1-6: Intensity of energy use, total and by economic activity</li> </ul>
Ec2	Economic development <ul style="list-style-type: none"> <li>• Ec2-1: Macroeconomic performance <ul style="list-style-type: none"> <li>a) Gross domestic product (GDP) per capita</li> <li>b) Gross saving</li> <li>c) Investment share in GDP</li> <li>d) Adjusted net savings as percentage of gross national income (GNI)</li> <li>e) Inflation rate</li> </ul> </li> <li>• Ec2-2: Employment <ul style="list-style-type: none"> <li>a) Employment-population ratio</li> <li>b) Vulnerable employment</li> <li>c) Labor productivity and unit labor costs</li> <li>d) Share of women in wage employment in the non-agricultural sector</li> </ul> </li> <li>• Ec2-3: Information and communication technologies <ul style="list-style-type: none"> <li>a) Internet users per 100 population</li> <li>b) Fixed telephone lines per 100 population</li> <li>c) Mobile cellular telephone subscribers per 100 population</li> </ul> </li> <li>• Ec2-4: Research and development <ul style="list-style-type: none"> <li>a) Gross domestic expenditure on Research and Development as a percentage of GDP</li> </ul> </li> <li>• Ec2-5: Tourism <ul style="list-style-type: none"> <li>a) Tourism contribution to GDP</li> </ul> </li> </ul>

**Table G.1 International urban sustainability indicators list (continued)**

Category	Indicators
<b>Ec3</b>	Finance
	<ul style="list-style-type: none"> <li>• Ec3-1: Debt service ratio</li> <li>• Ec3-2: Tax collected as percentage of tax billed</li> <li>• Ec3-3: Own-source revenue as percent of total revenues</li> <li>• Ec3-4: Capital spending as percentage of total expenditures</li> </ul>
<b>Ec4</b>	
	<ul style="list-style-type: none"> <li>• Ec4-1: Price of water</li> <li>• Ec4-2: Domestic water consumption per capita</li> </ul>
<b>Ec5</b>	
	<ul style="list-style-type: none"> <li>• Ec5-1: Informal employment</li> </ul>
<b>So1</b>	Energy Access
	<ul style="list-style-type: none"> <li>• So1-1: Percentage of city population with authorized electrical service</li> <li>• So1-2: Total electrical use per capita</li> <li>• So1-3: Number and duration of electrical interruptions per year per customer</li> </ul>
<b>So2</b>	Water access
	<ul style="list-style-type: none"> <li>• So2-1: Percentage of city population with potable water supply service</li> <li>• So2-2: Number of interruptions in water service</li> </ul>
<b>So3</b>	Education
	<ul style="list-style-type: none"> <li>• So3-1: Percentage of children completing primary and secondary education</li> <li>• So3-2: Percentage of school aged children enrolled in schools (by gender)</li> <li>• So3-3: Student/teacher ratio</li> </ul>
<b>So4</b>	Health
	<ul style="list-style-type: none"> <li>• So4-1: Mortality <ul style="list-style-type: none"> <li>a) Under-five</li> <li>b) Mortality rate</li> <li>c) Life expectancy at birth</li> <li>d) Healthy life expectancy at birth</li> </ul> </li> <li>• So4-2: Health care delivery <ul style="list-style-type: none"> <li>a) Percent of population with access to primary health care facilities</li> <li>b) Contraceptive prevalence rate</li> <li>c) Immunization against infection childhood diseases</li> </ul> </li> <li>• So4-3: Nutritional status <ul style="list-style-type: none"> <li>a) Nutritional status of children</li> </ul> </li> <li>• So4-4: Health status and risks <ul style="list-style-type: none"> <li>a) Morbidity of major diseases such as HIV/AIDS, malaria, tuberculosis</li> <li>b) Prevalence of tobacco use</li> <li>c) Suicide rate</li> </ul> </li> </ul>
<b>So5</b>	Safety
	<ul style="list-style-type: none"> <li>• So5-1: Number of homicides per 100,000 population</li> <li>• So5-2: Number of sworn police officers per 100,000 population</li> <li>• So5-3: Violent crime rate per 100,000</li> </ul>
<b>So6</b>	Fire and Emergency Response
	<ul style="list-style-type: none"> <li>• So6-1: Number of firefighters per 100,000 population</li> <li>• So6-2: Number of fire related deaths per 100,000 population</li> <li>• So6-3: Response time for fire departments from initial call</li> </ul>
<b>So7</b>	Poverty
	<ul style="list-style-type: none"> <li>• So7-1: Income poverty <ul style="list-style-type: none"> <li>a) Proportion of population living below national poverty line</li> <li>b) Proportion of population below \$1 a day</li> </ul> </li> <li>• So7-2: Income inequality <ul style="list-style-type: none"> <li>a) Ratio of share in national income of highest to lowest quintile</li> </ul> </li> </ul>

**Table G.1 International urban sustainability indicators list (continued)**

Category	Indicators
<b>S08</b>	Transportation <ul style="list-style-type: none"> <li>• S08-1: Km of transportation system per 100,000 population</li> <li>• S08-2: Annual number of public transit trips per capita</li> <li>• S08-3: Commercial air connectivity</li> <li>• S08-4: Average travel speed on primary thoroughfares during peak hours</li> <li>• S08-5: Transportation fatalities per 100,000 population</li> <li>• S08-6: Number of daily trips and time taken per capita by type of trip and by mode of transport</li> <li>• S08-7: Total average daily distance covered per capita by type of trip and by mode of transport</li> <li>• S08-8: Mode of transportation used by children to travel between home and school</li> </ul>
<b>S09</b>	Natural hazards <ul style="list-style-type: none"> <li>• S09-1: Percentage of population living in hazard prone areas</li> <li>• S09-2: Human and economic loss due to natural disasters</li> <li>• S09-3: Disaster prevention and mitigation instruments</li> </ul>
<b>S010</b>	Adequate housing <ul style="list-style-type: none"> <li>• S010-1: Durable structures</li> <li>• S010-2: Overcrowding</li> <li>• S010-3: Right to adequate housing</li> <li>• S010-4: Housing price and rent-to-income</li> </ul>
<b>S011</b>	Shelter <ul style="list-style-type: none"> <li>• S011-1: Percentage of city population living in slums</li> <li>• S011-2: Area size of informal settlements as percent of city area and population</li> </ul>
<b>S012</b>	Security of tenure <ul style="list-style-type: none"> <li>• S012-1: Secure tenure</li> <li>• S012-2: Authorized housing</li> <li>• S012-3: Evictions</li> </ul>
<b>S013</b>	Access to credits <ul style="list-style-type: none"> <li>• S013-1: Housing finance</li> </ul>
<b>S014</b>	Access to land <ul style="list-style-type: none"> <li>• S014-1: Land price-to-income</li> </ul>
<b>S015</b>	Promote social integration and support disadvantaged groups <ul style="list-style-type: none"> <li>• S015-1: Poor households</li> </ul>
<b>S016</b>	Culture <ul style="list-style-type: none"> <li>• S016-1: Number of cultural establishments per 100,000 population</li> <li>• S016-2: City expenditures on culture as a percentage of overall city budget</li> <li>• S016-3: Square meters of public recreation facility space per capita</li> </ul>
<b>S017</b>	Recreation <ul style="list-style-type: none"> <li>• S017-1: Square meters of public recreation as a percentage of overall city budget</li> </ul>
<b>S018</b>	Availability of local public green areas and local services <ul style="list-style-type: none"> <li>• S018-1: Citizens' access to nearby public green areas and basic services</li> </ul>
<b>G01</b>	Participation and civic engagement <ul style="list-style-type: none"> <li>• G01-1: Citizens participation</li> <li>• G01-2: Voters participation</li> <li>• G01-3: Civic associations</li> </ul>

**Table G.1 International urban sustainability indicators list (continued)**

Category	Indicators	
<b>Go2</b>	Transparent, accountable, and efficient government	• Go2-1: Transparency and accountability
<b>Go3</b>	Government	<ul style="list-style-type: none"> <li>• Go3-1: Corruption</li> <li>• Go3-2: Percentage of population having paid bribes</li> </ul>
<b>Go4</b>	Sustainable management of the authorities and businesses	<ul style="list-style-type: none"> <li>• Go4-1: Share of public and private organizations adopting and using environmental and social management procedures</li> </ul>

Source: Shen et al. 2011, 26-28.



*Photo: Nélida Escobedo*

# Notes & References





# Notes

## Notes for Table 3.1:

**1. Benefits:** Alexander and Tomalty 2002; Bannister 1992; Bartholomew 2007; Berridge Lewinberg Greenberg Ltd. 1991; Breheny 1996; Burton 2000; Churchman 1999; City of Vancouverer; DETR 1998; De Roo and Miller 2000; Gordon 1997; Haughey 2005; Hillman 1996; Holden and Norland 2005; Kamal-Chaoui and Robert 2009, Llewelyn-Davies 1998; LSE 2006; Mayor of London 2008; National House-Building Council 2007; New York City Planning Commission 1993; Newman and Kenworthy 1989; Portnov and Errell 2001; Regional Municipality of York 1994; Owens 1992; Rydin 1992; Stenhouse 1992; Urban Task Force 1999; Williams et al. 2000; Willis et al. 2001; Woodhull 1992; **Challenges:** Breheny 1992; De Roo and Miller 2000; DETR 1998; Jenks et al. 1996; Llewelyn-Davies 1998; Rydin 1992; Troy 1996; Williams et al 2000; Mullins 1995; Rapaport 1977; Troy 1996; Churchman 1999.

**2. Benefits:** Alexander and Tomalty 2002; Alterman 1997; Berridge Lewinberg Greenberg Ltd. 1991; Breheny 1992; Burton and Matson 1996; City of Vancouver 2008; Churchman 1999; DETR 1998; Haughey 2005; Kamal-Chaoui and Robert 2009; Mayor of London 2008; Portnov and Errel 2001; Urban Task Force 1999; Williams et al. 2000; **Challenges:** Chesire and Sheppard 2002; LSE 2006; DETR 1998; Troy 1996; Churchman 1999; Hitchcock 1994; Peiser 1992; Breheny 1992; De Roo and Miller 2000; Troy 1996; Williams et al. 2000; Simon and Wekerle 1987.

**3. Benefits:** Alexander and Tomalty 2002; Churchman 1999; City of Vancouver 2008; DETR 1998; Downs 2001; Hitchcock 1994; Israel Ministry of Interior 1992; Martin County 1994; Regional Municipality of York 1994; Churchman and Ginsberg 1984; Granovetter 1973; LSE 2006; National House-Building Council 2007; Roberts 1978; Cadman and Payne 1989; van Vliet 1985; Wohlwill 1985; Berridge Lewinberg Greenberg Ltd. 1991; Haughton and Hunter 1994; Jenks et al. 1996; Williams et al. 2000; Willis et al. 2001; Llewelyn-Davies 1998; Mayor of London 2008; New York Planning Commission 1993; Wong and Yeh 1985; Haughey 2005; **Challenges:** DETR 1998; De Roo and Miller 2000; McCarthy and Saegert 1978; Troy 1996; Churchman 1999; Hitchcock 1994; Aiello et al. 1985; Baum and Paulus 1987; Evans and Cohen 1987; Fleming et al. 1987; Jain 1987; Loo and Ong 1984; Rådberg 1996; Wilson and Baldasarre 1996; LSE 2004.

**4. Benefits:** City of Vancouver 2008; Hitchcock 1994; Haughey 2005; National House-Building Council 2007; New York City Planning Commission 1993; Audirac and Smith 1992; Churchman et al. 1996; Faludi and van der Valk 1994; Jenks et al. 1996; Churchman 1999; Haughton and Hunter 1994; Alexander 1993; Berridge Lewinberg Greenberg Ltd 1991; Frost and Dingle 1995; Troy 1995; LSE 2006; Christoforidis 1993; Peiser 1992; DETR 1998; **Challenges:** Alexander 1993; Ewing 1997; Haughton and Hunter 1994; Troy 1996; Churchman 1999; LSE 2006; Breheny 1992.

**5. Benefits:** LSE 2006; Berridge Lewinberg Greenberg Ltd 1991; Haughey 2005; Kamal-Chaoui and Robert 2009; Martin County 1994; New York City Planning Commission 1993; Regional Municipality of York 1994; van der Ryn and Calthorpe 1986; Churchman 1999.

**6. Benefits:** Alexander and Tomalty 2002; Anderson, Kamaroglou and Miller 1996; Breheny 1992; Broberg and Kyttä 2010; City of Newcastle upon Tyne 1993; City of Vancouver 2008; DETR 1998; DoE 1994; ECOTEC 1993; Holden and Noland 2005; Newman and Kenworthy 1989; Owens 1992; Regional Municipality of York 1994; Stenhouse 1992; **Challenges:** Rydin 1992; Owens 1992; Troy 1996.



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## Photo References

All photos by team members with the exceptions of those listing the citations below.

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