Cities that Work

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IGC International Growth Centre

Urban planning for productive and liveable cities

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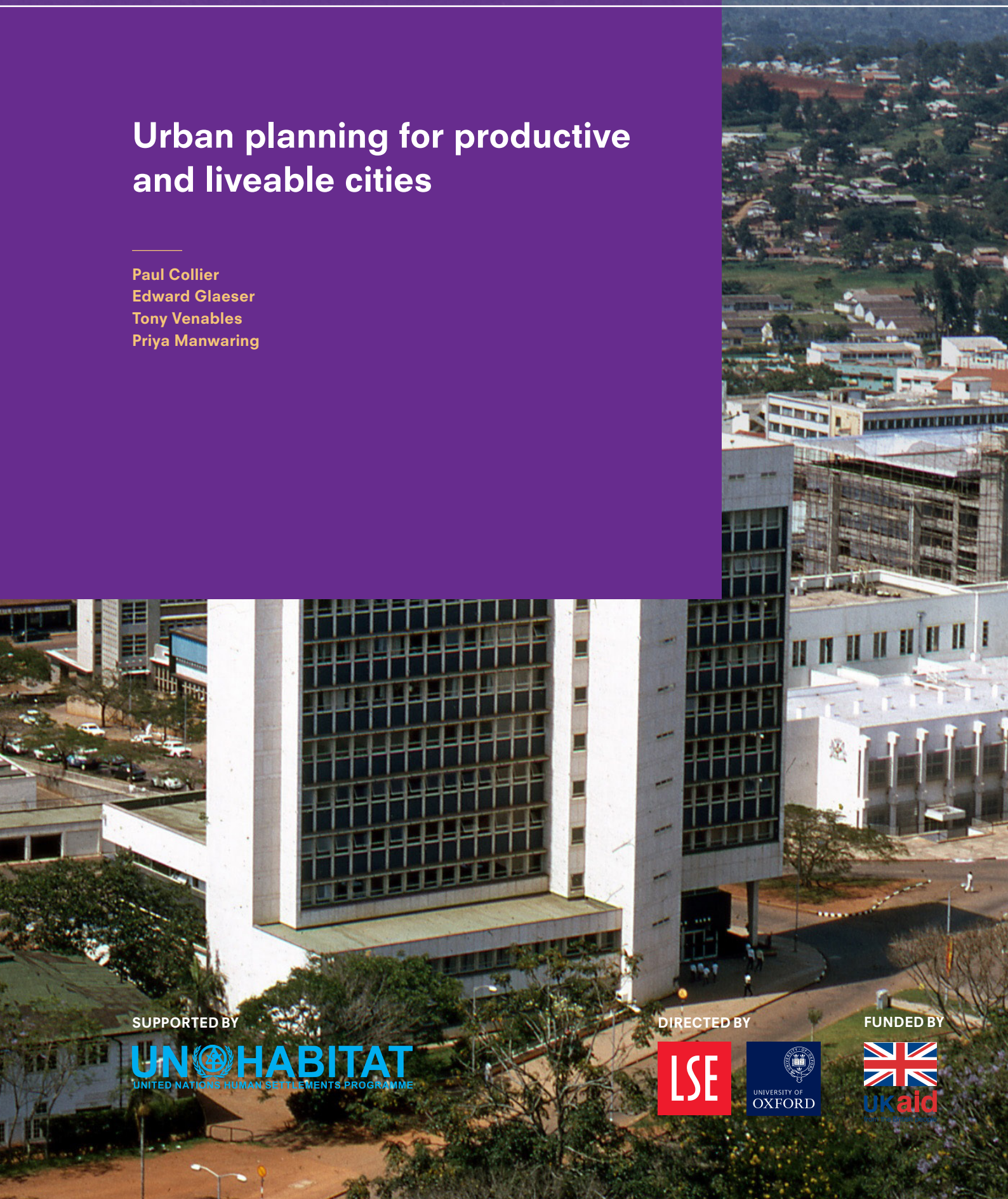

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Table of Contents

Executive Summary 2

1. The importance of urban land use planning 4

2. Designing spatial plans in a city 6

2.1. Five key principles for urban master planning 6
2.2. Are grid-systems the gold standard for spatial planning? 11
2.3. What type of zoning regulations are most appropriate for improving urban land use? 13
2.4. How can policymakers plan around central informal settlements? 18
2.5. Designing spatial plans according to local conditions and capacity 19

3. Should density regulations be implemented to improve land use in a city? 21

4. Acquiring land for urban 'transformation' 23

4.1. Under what circumstances is compulsory acquisition appropriate for improving efficiency of land use? 23
4.2. How to effectively implement land acquisition? 24
4.3. Land readjustment as an alternative to acquisition 27

5. Cross-cutting ways to improve urban planning design 33

5.1. Coordination of different government agencies and private providers 33
5.2. Locally specific research and data collection 34
5.3. Public participation in planning 36

6. Ensuring compliance with land use plans 37

7. Land use planning and financing for urban development 40

8. Concluding remarks 42

Recommended further reading 42

List of case studies

Manhattan's 1811 grid plan for urban expansion and similar grid planning in Colombia..... 10
Large-scale land acquisition in Singapore..... 26
Private contribution in land readjustment schemes in South Korea and Japan 29
Land readjustment enabling low-income housing in Thailand and South Korea..... 30
Auctioning building rights: CEPACS in Sao Paolo..... 41

Executive Summary

Decisions over land use can transform cities from sites of overcrowding and congestion into engines of national growth and prosperity. A city's ability to create productive jobs and boost living standards is inextricably linked to the use of urban land. Smart land use creates a platform on which firms and workers cluster together, individuals can access basic infrastructure, goods and services, and natural resources are protected for sustainable urban development.

Key to effective land use are **well functioning land rights**, that give individuals the security to make investments on their land, and enable the transfer of land to its most effective use through markets. But this is not sufficient. The interlinked nature of urban activity means that there is also a strong role for government in **planning and regulating urban land use**. Effective planning coordinates complementary private investments, to ensure adequate provision of public infrastructure and spaces that have significant benefits to society at large, and mitigates the negative effects of certain types of development that can put whole cities at risk. Planning for future urban expansion *before it takes place* is particularly important; retrofitting infrastructure after settlement has already occurred is up to three times more expensive[1].

In many middle income cities, poorly designed and unrealistic land use plans have meant that development has proceeded in a largely haphazard way, resulting in urban sprawl and limited provision of necessary public infrastructure. Development both by individual owners and large scale developers fail to take into account the wider impact of their investments. At the same time, in other cities, overly restrictive regulations on land restrict development overall and limit the provision of affordable formal housing. Limited coordination between various government departments involved in planning also result in incoherent and overlapping regulations on land use.

This is not inevitable. Examples from across developed and developing cities reveal that effective reforms to improve realistic planning and changes to existing overly restrictive regulations can transform land use:

- ✓ In South Korea, effective use of land readjustment schemes to plan and provide infrastructure on urban and peri-urban land have meant governments have been able to provide largely self-financing investments in infrastructure and public spaces[2]. More than half the land area of the capital, Seoul, was redeveloped in this way[3].

- ✓ Allowing mixed use development in residential settlements in Alwar, India, has meant residents are able to set up tailoring enterprises from their homes. This has been associated with household incomes rising by up to 8 times between 1985 and 2000[4].

[1] Edesio Fernandes, 'Regularization of Informal Settlements in Latin America' (Lincoln Institute of Land Policy, 2011).
[2] Nancy Lozano-Gracia et al., 'Leveraging Land to Enable Urban Transformation: Lessons from Global Experience', *World Bank Policy Research Working Paper*, no. 6312 (2013)
[3] Schnidman, Frank. 1998. Land Readjustment. *Urban Land* (February).
[4] Wakely and Riley (2011) "The Case for Incremental Housing."

- ✓ Proactive planning for a seven-fold urban expansion of the city of New York, through their *1811 Commissioners Plan*, demarcated and reserved land for a grid system of roads on undeveloped agricultural land in Manhattan. As the city expanded, this demarcated land was acquired and roads built so that urban development could occur in a structured manner, connected by this grid system. The same grid system created by these plans today carries New York's traffic, with water and sewerage infrastructure built beneath.

Urban planning and the Global Future Cities Programme

The FCO Global Future Cities Programme aims to promote sustainable, inclusive, and economic growth in 19 cities across 10 countries worldwide including Turkey, Brazil, South Africa, Nigeria, Indonesia, Malaysia, Philippines, Vietnam, Myanmar and Thailand. It aims to support the development challenges that arise with increasing rapid urbanization, climate change and urban inequality, which can lower long-term growth prospects of cities. By designing and implementing policy interventions in these cities to achieve the goals of urban policymakers, the Global Future Cities Programme aims to contribute significantly to achieving the Sustainable Development Goals (SDGs), in particular SDG 11 on Sustainable Cities and Communities, and implementation of the New Urban Agenda.

In response to the significant challenges faced by middle income cities in improving land use in cities to meet the needs of rapidly growing populations in a way that is efficient, sustainable and socially inclusive, urban planning is one of the key pillars of the FCO Prosperity Fund's Global Future Cities Programme. Urban planning is a wide-ranging term that can refer both to setting strategic goals and plans for a city's future, or more specifically to the planning and regulation of urban land. This paper seeks to frame and inform key areas of urban land use planning policy, based on economic research, cross country evidence, and initial learnings from the Strategic Development Phase of the Programme. In this way, it seeks to provide an evidence base for future decision making in urban land use planning.

In this paper

This paper provides evidence to inform key policy decisions around the design and implementation of urban land use plans. In **Section 1**, the paper outlines the importance of land use planning for productive and liveable cities. In **Section 2**, the paper explores trade-offs relating to the design of spatial plans, and in **Section 3**, it discusses considerations for reforming density regulations in cities. In **Section 4**, the paper explores options for making space for necessary public investments. **Sections 5 and 6** look at how the design and implementation of plans can be improved, while **Section 7** explores the link between planning and financing for urban development. **Section 8** concludes.

1. The importance of urban land use planning[5]

Land is the most valuable asset in a city. The use and structure of urban land is decisive in determining the potential for individuals to access jobs, services, and collectively drive productive growth. Effective land use:

- Creates a platform on which firms and workers cluster together, allowing workers to specialise and firms to access larger markets.
- Enables individuals access basic infrastructure, goods and services necessary for their quality of life, such as housing, public space, sanitation and transportation.
- Ensures natural resources are protected and land vulnerable to natural disaster is managed for sustainable urban development.

What does efficient land use look like?

For middle-income cities, high density development in urban centres is valuable so that firms and households can interact and exchange ideas, benefiting from the **scale and specialisation** that comes with clustering of activity. These forces drive the growing productivity of firms that make a city an engine for national growth. As land becomes less valuable the further out from the centre of a city, individuals who can afford to travel further to their jobs and want to live in larger houses can do so without taking up large amounts of valuable central land. Land intensive industries that benefit significantly from clustering with complementary firms can do so on the outskirts of a city.

Coordinating density of urban development with provision of infrastructure such as roads and water and sanitation services can improve people's access to jobs and services across a city, and allow for more financially sustainable service provision. This in turn increases sustainability and living standards for those currently isolated from job markets or forced to live in overcrowded informal settlements.

However, as many cities rapidly expand, land risks becoming occupied without the coordination or supporting infrastructure that underpin this process. Without active land policy, productive clusters are unable to form, and basic infrastructure and services become prohibitively costly to provide. Instead, land becomes occupied through an unplanned process of urban sprawl. The result is urban development that is inefficient, unliveable, and environmentally unsustainable.

1.1. Land use planning to address challenges of uncoordinated urban development

Urban land use planning here refers to the process of **designing and implementing regulation that coordinates how land is used in cities**. This relates both to planning for development of new "greenfield" areas to accommodate urban demographic growth, as well as for redevelopment and retrofitting of existing urbanised areas. Where functioning land

[5] Urban planning is a wide-ranging term that can refer both to setting strategic goals and plans for a city's future, or to the planning and regulation of urban land use. In this paper, we will be looking at the latter -urban land use planning for cities.

markets exist, land use planning can done through **land market regulations** that constrain the market according to planning decisions.

The importance of formal land rights for urban land use

Formal land rights are key to ensuring long term productivity and liveability in cities. By enhancing both the security of land titles and the ease with which these titles can be transferred through land markets, formalisation of titles allows for more efficient use of land over time to meet the needs of residents and firms.

However, even where land markets exist, there are often *market failures* that necessitate the role of land use planning in coordinating and anchoring private investments. These market failures include positive and negative 'externalities' or spillover effects between different types of private land use, such as pollution, and the existence of public goods[6] such as street lighting and roads that need to be provided by government. At the same time, efficiency is not the only goal of urban policy, Formal land market transactions can often result in gentrification, with lower-income households being forced to move out of central areas of a city. Active land use planning to provide for low-income housing can counteract this to allow for socioeconomically diverse neighbourhoods.

This brief considers policy decisions and implementation challenges associated with three different aspects of urban land use planning:

1) Urban spatial master plans, that map future plans for the spatial structure of a city;
2) Density regulations, that impose limitations on density of development in a city;
3) Acquisition of land for urban transformation.

Policymakers face decisions when designing and implementing each of these elements of urban land use planning, to harness their potential benefits and minimise their costs. Active, coordinated and well-designed urban land use policy to coordinate and complement private land use can help cities to achieve a number of goals. Increasing central density enhances potential clustering effects, and allows individuals easy access to jobs. Encouraging adequate land for necessary public infrastructure and coordinating land uses that have negative and positive effects on neighbouring plots can help to improve overall liveability, productivity and sustainability in cities. At the same time, land use regulations can allow policymakers to achieve social cohesion and to reduce inequality in cities by leveraging private investors to provide low-income housing and services for integrated neighbourhoods.

Proactive policies to plan for urban land use are particularly important given the **inertia of spatial change** in cities. This inertia results from substantial sunk costs as well as slow depreciation of infrastructural and building investment. Investments in transportation infrastructure, such as ports, last between 30 and 200 years, whilst formal buildings including housing last between 30 and 150 years[7].

[6] Public goods here refer to those goods that are non-rival in nature (i.e. one person's consumption does not reduce the availability of the good for others) and non-excludable (i.e. it is not easily possible to prevent their use by specific individuals). Without government provision, these goods are unlikely to be provided given that there is limited potential for cost-recovery.
[7] Hallegatte (2009) "Strategies to Adapt to an Uncertain Climate Change"

2. Designing spatial plans in a city

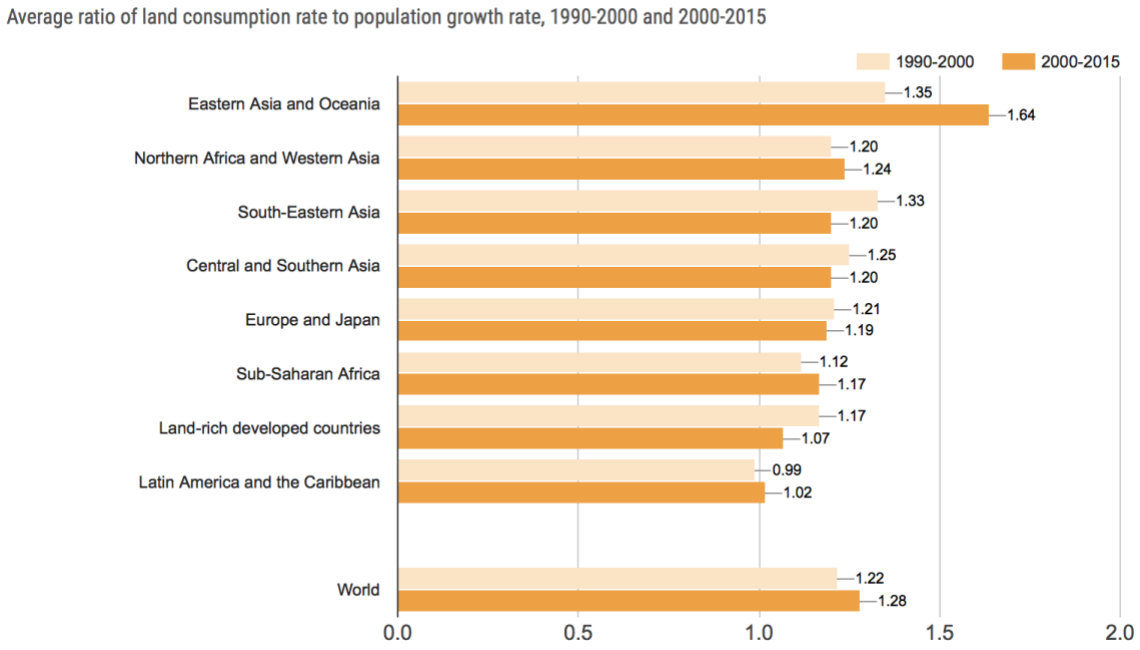
2.1. Five key principles for urban master planning

Spatial planning for a city is essential so that both city authorities and firms know what to expect for future development. In a number of cities, land use regulations stem from an urban spatial masterplan that maps out future plans for the structure of a city.

Economic analysis suggests five key principles in designing plans to improve the liveability and productivity of land use:

1. The need to enhance residential and commercial density

Across developed and developing cities, **urban sprawl**, whereby the spatial footprint of a city increases at a higher rate than population growth, is common. Across the world, population density in urban areas declined by 1.5% between 2000-2013[8]. At current rates of increase in land consumption, urban footprints in non-developed countries will increase by almost 4 times by 2050 while population growth is predicted to increase by only 70%[9].



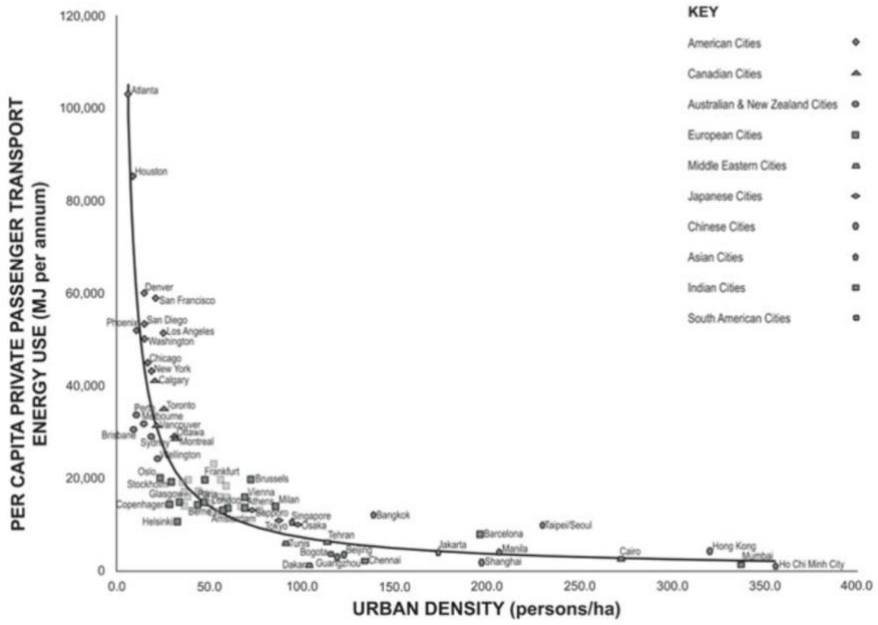
Source: UN Statistics, 2017

Urban sprawl is often characterised by discontinuous **leapfrog development**. This means that development occurs on land that does not border existing development. Large areas of central land in cities remain undeveloped as many firms and property developers choose to locate further out in a city.

[8] Shlomo Angel et al., 'Making Room for a Planet of Cities' (Lincoln Institute of Land Policy, 2011).
[9] Angel, S. et al., 'Atlas of Urban Expansion: The 2016 Edition. Volume 1: Areas and Densities' (NYU Urban Expansion Program at New York University, UN-Habitat, and the Lincoln Institute of Land Policy., 2016).

Underdeveloped and vacant urban land, particularly in the centre of a city, **increases per capita costs of infrastructure provision and increases average distances between people's homes and jobs**. With higher residential densities in Cape Town not in the urban centre but instead higher further out from the city centre, average commuting distances are long and costly. **86% of residents in the city cannot affordably access marketplaces[10].**

As a result, low density development reduces efficiency of firms by increasing transport costs, preventing cross-firm learning and limiting their potential markets for scale and specialisation. It also **limits the potential for cost effective public transport**[11].



Both because of greater distances that need to be travelled, and the limited scope for cost-effective public transport as an alternative to private cars, low density development results in more **environmentally harmful emissions** from motorised travel.

Urban density and transport fuel use (Newman and Kenworthy, 2015)

2. The importance of adequate space for transport links and other public spaces

To improve productivity and liveability in cities, land use plans need to include adequate connections between firms and workers, via roads, public transport systems and non-motorised transport. This requires allocating land for these transport links, and ensuring sufficient **intersections** between streets. The amount of land needed for transport links will depend in part on local densities. Higher density levels on transport routes increase both the need for high capacity transport systems, and the financial sustainability of public transit services through user fees. Though acceptable walking times vary with the culture and income of a city, worldwide surveys indicate that most people will only find public transport acceptable if it requires no more than 10 minutes of walking to reach a station[12].

[10] Wainer, Ndengeingoma, and Murray (2016) "Incremental Housing, and Other Design Principles for Low-Cost Housing"
[11] For more on mobility and density, see the *Cities that Work* policy paper on urban mobility
[12] Alain Bertaud, 'The Spatial Organization of Cities: Deliberate Outcome or Unforeseen Consequence? (Working Paper)', *Institute of Urban and Regional Development*, IURD Working Paper Series, 2004, http://escholarship.org/uc/item/5vb4w9wb.

Investments in transport links such as roads, bus lanes and light rail stations can also act to anchor private investment expectations. By improving connectedness and desirability of surrounding property, these investments provide a credible signal of planned future investments in surrounding areas.

Construction along new roads in Addis Ababa
(Source: Bird and Franklin, 2015)

Allocating land for other forms of public space, such as public parks, also yields significant benefits for citizens in terms of physical and psychological health as well as environmental conservation[13]. Free access to public spaces provides greater opportunities for social exchange and cohesion, generating a sense of citizenship among users. Effective urban planning provides interconnected public spaces across a city to maximise their use and the benefits they provide for all citizens[14].

3. Coordinating positive and negative 'spillover' effects

For any long term project, investors need a view of the future of a city – and preferably more or less the same view. At early stages of urban development, private firms face a coordination problem: given the strong positive effects of firm clustering for the exchange of ideas and inputs, often no one firm is willing to make risky large-scale investments without assurance that others will do the same. In the absence of costly infrastructure investments, credible plans can help to coordinate and guide private expectations to capture these positive clustering effects.

At the same time, where large investments in industry and manufacturing activity are made, they can also have significant negative effects on surrounding commercial and residential activity, including air and water pollution. Investments in housing can have similar negative impacts on surrounding activity - unplanned settlements regularly obstruct the provision of public infrastructure that could provide connectivity and services for residents. When built on floodplains, these settlements can put whole cities at risk[15].

[13] World Health Organisation, 'Urban Green Spaces and Health: A Review of Evidence', 2016.
[14] See UNHABITAT(2013) 'Streets as Public Spaces and Drivers of Urban Prosperity' for more on the role of streets as public spaces in enhancing productivity, sustainability and social inclusion.
[15] For more information on regulations to improve resilience to natural disaster, see *Cities that Work* framing paper on 'Embedding resilience: city responses to acute shocks and chronic stresses'

At the heart of urban spatial planning since its inception has been the attempt to enhance these positive effects of urban density, and to mitigate these downsides. Effective plans coordinate both public and private land uses in a city to enhance productivity and liveability.

4. Connecting land use planning to strategic planning

At the same time as planning for urban land use, governments often have strategic plans that outline a broad vision or set of goals for the future functioning of cities. Given the importance of a city's spatial structure for a variety of outcomes that affect efficiency, equity and sustainability, urban master plans need to be designed keeping closely in mind these strategic plans and their interrelated goals. Without sufficient coordination of strategic and spatial urban planning, at best, land use planning becomes merely reactive, addressing short term land use problems rather than facilitating long term interrelated policy goals. At worst, land use regulation is likely to come into conflict with public urban projects.

In linking spatial and strategic planning, policymakers face a tension between designing spatial plans that provide long term certainty to investors, and allowing for sufficient flexibility to adapt to rapidly changing conditions in middle income cities. As such, through spatial plans can take a longer view, it is beneficial to continue to monitor land use over time and may be necessary to undertake reviews of land use plans every 5 years to ensure that enforcement is in line with strategic priorities of the city.

5. The importance of proactive planning

As a result of natural population growth, rural-urban migration, and greater demand for larger urban housing, many cities are growing rapidly in both geographic area and population. Proactive planning for this rapid growth of cities is particularly important; poor planning today stores up costly problems for the future.

- Retrofitting infrastructure such as drainage and roads after settlement has already occurred is up to three times more expensive than installation alongside housing construction[16].
- If urbanisation is occurring or is predicted to occur outside of the city limits, then not including these peri-urban areas in urban master plans can actually encourage leapfrog development and urban sprawl. This is because land use regulations applied within designated urban areas can raise the price of land. Consequently, land just outside of the regulated area is relatively even cheaper, encouraging private developers to develop on this land instead.

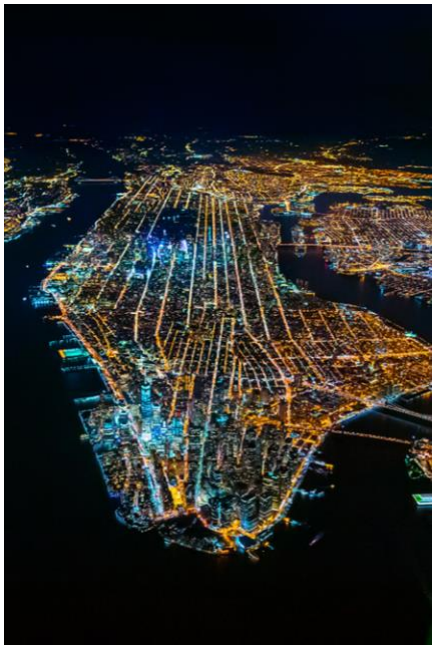
Therefore, it is critical that spatial planning takes into account increases in population that will result in spatial expansion of the city and higher demands for public infrastructure on existing urban land.

[16] Fernandes, 'Regularization of Informal Settlements in Latin America'.

Case study: Manhattan's 1811 grid plan for urban expansion and similar grid planning in Colombia

One low-cost way of proactive planning is through demarcating land for arterial roads and other core infrastructure on the urban periphery before settlement occurs. This was the approach adopted by the City of New York in their **1811 Commissioners Plan.**

At the start of the 19th century, the population of New York was just under 100,000 but was estimated to increase five-fold in the next 50 years (this was in fact an underestimate, as the population actually increased eight-fold over this period[17]). Facing the prospects of mass urbanization but with very limited funding at the city level, the Common Council of New York City devised a bold and low-cost plan to expand the urban area of Manhattan seven-fold. Based on a map drawn up in 1807, the *Commissioners Plan* was enacted in 1811. This plan mapped and demarcated a grid system of roads on undeveloped agricultural land in Manhattan, anticipating a seven-fold expansion of the city's footprint. A total of 30% of the land was reserved for public infrastructure uses[18]. As the city expanded, demarcated land was acquired so that urban development could occur in a structured manner, connected by this grid system. It was originally predicted that the seven-fold expansion plan would last 500 years - in fact, the expansion area was filled by 1900 when another similar seven-fold expansion plan was developed. The same grid system created by these plans today carries New York's traffic, with water and sewerage infrastructure built beneath.



The grid system laid down by the 1811 Commissioners Plan (left) is still in place in New York to this day (right).(Left source: Photograph, History of Architecture CCA, 2009. Right source: Laforet, 2015)

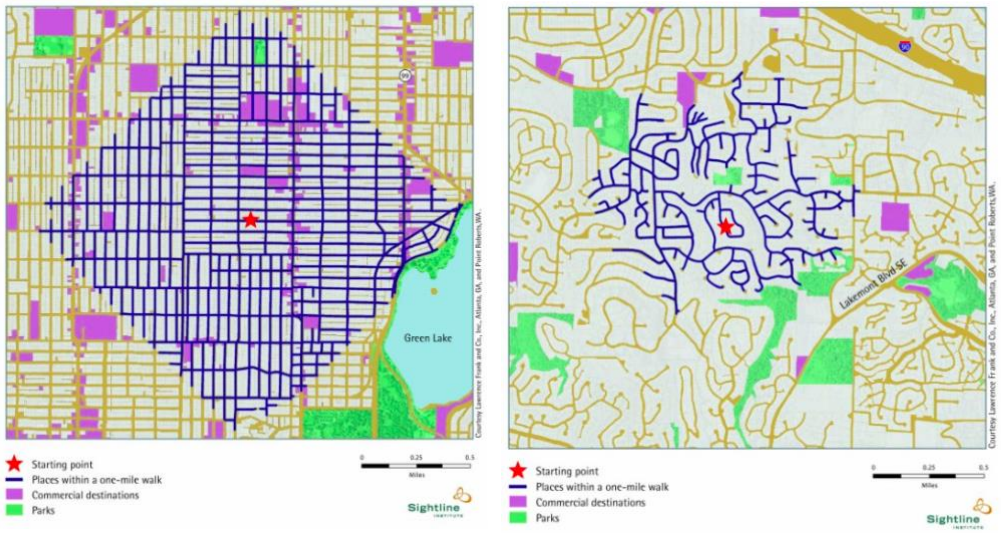
[17] http://www.nytimes.com/2012/01/03/arts/design/manhattan-street-grid-at-museum-of-city-of-new-york.html
[18] https://paulromer.net/urban-expansion/

Signalling future investments can be done in a way that does not require significant resources and time. In the Colombian city of Valledupar, for example, a future grid system has been demarcated by planting trees on acquired land, along the sides of future roads. This provides a visible and popular signal of future transport links to limit costly and disruptive resettlement in the future.

2.2. Are grid-systems the gold standard for spatial planning?

One major decision in planning roads is the spatial structure of streets in newly developed areas of a city. There are two major ways in which streets in cities can be laid out: irregular road layouts with subdivided loops and cul-de-sacs for suburban areas, or a more regular grid structure. In designing master plans for newly urbanising areas or elsewhere where significant redevelopment is likely, a **grid-like system** is most efficient in reducing travel times across a city:

- ✓ A grid structure is the most efficient way of getting from any point to another in a city
- ✓ It is easy to navigate even for those not familiar with a particular area
- ✓ If a particular road in a grid structure is blocked, traffic can be rerouted easily



Destinations in one mile walking distance in compact grid in Seattle vs walkability in suburbs of Bellevue, WA, where there are winding streets and cul-de-sacs
(Source: Sightline Institute, http://www.sightline.org/maps-and-graphics/sprawl-urbanwalk-cs06m/, http://www.sightline.org/maps-and-graphics/sprawl-suburbwalk-cs06m/)

The planned grid structure in Manhattan, for example, has allowed for a framework of crossing arterial roads that encourages efficient land use. More irregular street planning is less able to provide high speed connectivity by vehicles in a city, with bottlenecks in traffic emerging at peak travel times.

Where there is significant traffic flow that does not adhere to the grid structure, major roads can be built that cut across the grid system. The Manhattan Broadway is a clear example of this.

Manhattan's grid structure with Manhattan Broadway cutting diagonally across

(Source: Google Maps, 2017)

However:

- × Although it reduces congestion in some areas, the straight road grid system may come at the expense of tranquillity, sociability and pedestrian safety for low density residential areas which would otherwise have little traffic. In these cases, grid structures require traffic controls such as speed bumps to enhance pedestrian safety. Cul-de-sacs, on the other hand, provide quiet and safe spaces for children to play.

- × The grid system for roads is the most land-consuming form of road layout

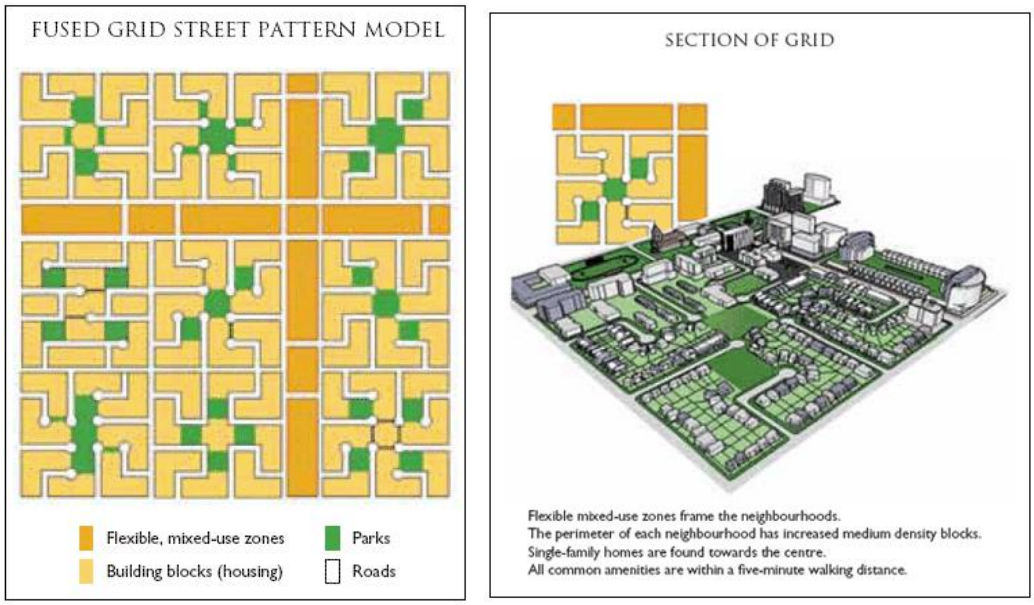
	Square grid (Miletus, Houston, Portland, etc.)	Oblong grid (most cities with a grid)	Oblong grid 2 (some cities or in certain areas)	Loops (Subdivisions - 1950 to now)	Culs-de-sac (Radburn - 1932 to now)
Percentage of area for streets	36.0%	35.0%	31.4%	27.4%	23.7%
Percentage of buildable area	64.0%	65.0%	68.6%	72.6%	76.3%

(Source: Canada Mortgage and Housing Corporation, 2002)

- Grid structures also require more forward **planning in advance** of settlement to ensure roads can be built accordingly to a set grid structure. They are not ideally suited to areas where roads need to be retrofitted.

As such, a more irregular road structure may be more applicable for residential areas. Even in these areas, however, it is possible to capture the benefits of both systems through a *fused grid* structure. Under this structure, a grid system of main roads allows for connectivity between neighbourhoods in a city, whilst within a neighbourhood, discontinuous roads with

pedestrian footpaths or that are entirely pedestrianised connect houses[19]. This type of structure allows for tranquil neighbourhood streets and increases the potential for walking short distances whilst facilitating efficient traffic flow between neighbourhoods.



(Source: Canada Mortgage and Housing Corporation, 2017)

2.3. What type of zoning regulations are most appropriate for improving urban land use?

Zoning refers to a specific type of regulation that regulates what purposes land in certain areas of a city are to be used for. In this way, zoning regulation can be used to implement master plans and outline more detailed requirements of buildings in an area. Zoning can have a number of benefits:

- ✓ Zoning can be used to prevent development on certain pieces of land. This can encourage **conservation** of certain eco-systems such as wetlands, and prevent development on land subject to **natural disaster**.

In Dar es Salaam, zoning has been used to restrict construction in flood risk areas while formalising property rights in less vulnerable areas in order to incentivise families to evacuate flood prone neighbourhoods. As families move to these new safer areas, the city also provides water supply, drainage, sanitation, transport and all other basic infrastructure services[20]. Though this has helped to reduce vulnerability of households, it is not without its challenges. Lack of enforcement and potential financial gain does result in some relocated families selling their formalised properties and moving back to their original better connected vulnerable areas.

[19] Canada Mortgage and Housing Corporation, 'The Fused Grid: A Neighbourhood and District Layout Model' (Canada Mortgage and Housing Corporation, 2017), https://www.cmhc-schl.gc.ca/en/inpr/su/sucopl/fugr/index.cfm.
[20] For more on zoning for resilience, see Cities that Work Framing Paper on 'Embedding resilience: city responses to acute shocks and chronic stresses'

- ✓ **Inclusionary zoning** can be used to prevent displacement of low-income households and ethnic segregation. In inclusionary zones, regulations mandate that construction projects or areas have a minimum percentage of housing units that are affordable to lower income households, or to particular ethnic groups. Higher density regulations are often applied to incentivize developers to build in these zones. In these cases, lower revenues from rent are compensated by the additional building density. Singapore, for example, used inclusionary zoning to reduce the costs of central urban housing for low and middle income households[21].

- ✓ By implementing zoning regulations, individual permitting decisions on the use of land in a city can happen at a quicker pace. This in turn vastly improves efficiency of formal construction on land. The World Bank's Doing Business Report (2014)[22] finds that among OECD high income countries, building permits are granted 19 days more quickly when zoning procedures are included in the process.

- × However, zoning regulations need to be designed carefully keeping in mind the city's need for different land uses. If zoning overly restricts certain types of land use – particularly housing - this can have extremely adverse effects on those who can no longer afford to live or produce in these areas. Evidence suggests that high house prices in a number of American cities is the result of restrictive zoning and other land use controls[23]. Similarly, inappropriate zoning regulation has been shown to encourage informal settlement in Brazilian cities[24].

  Zoning regulations that limit housing in a city and raise the price of residential land mean that (particularly poorer) citizens either have to reduce the amount of land they consume, or will not be able to afford to live in formal urban housing. The extent of this adverse effect is dependent on whether investment can be made in increasing density in zones through greater building height, rather than through crowding. One challenge for policymakers is that zoning regulations to limit housing quantity and affordability are likely to be supported by existing homeowners who experience the benefits of this in the form of their higher house prices.

- × Related to this, zoning regulations that are unenforceable can be **more damaging than no regulations at all.** By putting in place regulations that are strongly resisted by landowners and that city governments do not have the capacity to enforce, governments are inadvertently legitimising and therefore encouraging informality.

  In addition to efforts to ensure that zoning reflects current and planned land use and does not restrict housing affordability, there are some ways in which policymakers can incentivise individuals to comply with regulations. Where pieces of land are privately owned, for example, limits on building can be incentivised by providing **transferrable development rights (TDRs).** Through these, the government

[21] Mona Qureshi and Robin King, '3 Ways Land-Use Planning and Zoning Can Increase Urban Density', *TheCityFix* (blog), 2015, http://thecityfix.com/blog/three-ways-land-use-planning-zoning-can-increase-urban-density-mona-qureshi-robin-king/.
[22] World Bank (2014) "Zoning and Urban Planning: Understanding the Benefits"
[23] Edward L Glaeser and Joseph Gyourko, 'The Impact of Zoning on Housing Affordability', Working Paper (National Bureau of Economic Research, March 2002), https://doi.org/10.3386/w8835.
[24] Ciro Biderman, 'Informality in Brazil: Does Urban Land Use and Building Regulation Matter?' (Lincoln Institute of Land Policy, 2008).

provides owners of land that cannot be built on in-kind compensation in the form of development rights that can be sold to third parties or used in other predefined areas. Such schemes have been implemented in cities such as Mumbai, Sao Paolo and Curitiba[25].

Single or mixed use zoning?

In any area of a city, policymakers will need to decide whether to implement single or mixed use zoning:

- Single use or conventional zoning separates residential, commercial and industrial land use into different zones
- Mixed use or form-based zoning allows for a mix of land uses in the same area

Single use zoning was introduced in many cities in the 19th century in response to rapid industrialisation that resulted in many factories and firms in cities that had significant negative effects (such as air and water pollution) on surrounding residences.

- ✓ If the majority of firms that exist or that are planned for experience significant benefits from firm clustering, and there are negative effects of such clustering on residential properties, single use zoning can raise both **efficiency and liveability** in cities.

These two characteristics may be more true of the production of **internationally traded goods** because these firms often experience large benefits from clustering in the form of:

- Large markets for intermediary input firms
- A wide pool of very specialised labour for the industry
- Sharing of tacit knowledge that occurs through density in a cluster.

Efficient production of goods by these firms does not require densely closely located customers, but instead adequate transport links for the movement of goods to ports.

However, though single-use zoning may be appropriate to encourage intensive clustering of certain types of industries and to mitigate negative externalities of certain land use on others, issues of industrial pollution are less pertinent to **cities where production is oriented towards services, technology and finance.** Mixed use zoning has become increasingly popular among urban planners because of the significant benefits it can provide:

- ✓ It can **improve efficiency for local service providers whose goods and services exhibit high costs of transportation**, such as coffee shops and street vendors. Dispersed located of these firms in residential neighbourhoods within walking distance of people's homes may be necessary in order to allow them to remain

[25] Soumya Dharmavaram, 'Land Value Capture in Urban DRM Programs' (The World Bank, 1 July 2013)

financially viable. Where such activity forms the majority of economic output in a city, it makes most sense to allow for mixed land use zoning.

- ✓ It can also reduce traffic in a city by allowing individuals to live closer to their place of work. This may be **particularly beneficial for poorer households**, both in reducing commuting costs and because of the dependency of low-income households on home-based economic activity. Providing workshop facilities as part of a sites and settlements upgrading of central low-income residential settlements in Alwar, India, for example, has allowed many women in these settlements to set up tailoring enterprises from their homes. This has been associated with an increase in household incomes by up to 8 times between 1985 and 2000[26].

- ✓ Mixed use zoning can also **enhance security** (particularly for women) by encouraging high levels of activity in all areas at all times of day.

- ✓ At the same time, in the absence of regulation, mixed use development is more prevalent in middle income cities, making it easier for policymakers to 'retrofit' mixed use zoning to existing areas of urban development.

The potential benefits of implementing single use zoning will need to be weighed against its costs for a city, depending on current land use and economic activity.

However, in the long run, mixed land use planning **should not be advocated on the basis of reducing transportation needs and congestion** across a city. Though mixed use neighbourhoods can provide short term relief to pressures on infrastructure, advocating this implies that people who live in neighbourhoods will work within these neighbourhoods. This encourages a city structure that is no more than a series of disconnected boroughs that fail to adequately capture the benefits of agglomeration that justify increased costs of density in the first place.

Zoning for cultural heritage

In a number of cities, including cities such as Ankara and Bursa in Turkey that form part of the Global Future Cities Programme, zoning regulations limit new development in central areas based on preservation of cultural heritage. Though this may offer opportunities for tourism and help to preserve aspects of cultural identity, these will need to be weighed against the costs of preventing higher density development and better quality infrastructure to support high demand for central urban land. In New York, widespread historical preservation in the centre of the city, with 20% of land in Manhattan in a historical preservation district, severely limits the availability of high density affordable housing options close to the city centre. To combat these effects, heritage preservation schemes in cities such as Cairo are matched with targeted policies to promote affordable housing.

In many cases, preservation of particular buildings, rather than preserving aspects of the built environment in whole areas, may be a more suitable alternative for governments. For

[26] Wakely and Riley (2011) 'The Case for Incremental Housing'.

those buildings and areas that are preserved, additional policies to promote the repurposing of these structures can also allow for economic activity to take place alongside cultural preservation.

Zoning to limit urban sprawl

Zoning to prevent development on the edges of city limits as part of a "green belt" has been attempted in many cities, such as London and Medellin, in an effort to reduce urban sprawl. In Medellin, officials in 2011 announced the construction of a 72 kilometre "circular park", also referred to as the Green Belt, across the hillsides around the city.

Green belts have a number of potential benefits in theory:

- ✓ Protection of the natural environment around the city, with positive effects on air quality and health in a city
- ✓ Urban resilience, with open (particularly green) land around a city allowing for urban cooling, flood protection and carbon absorption[27]
- ✓ Reduction of urban sprawl, particularly though informal settlements on landslide prone land
- ✓ Improved quality of life of residents currently at the city outskirts
- ✓ Job opportunities for those living nearby through construction, maintenance and food production.

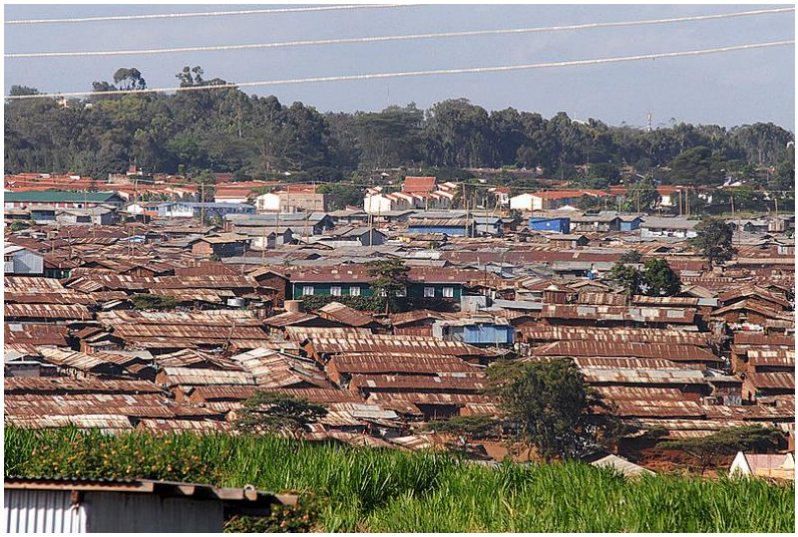
However, greenbelts do not come without costs, and require careful planning and design. In London, the enforcement of a Green Belt around the city without sufficient increases in housing supply to match the reduction in land for housing has contributed significantly to a crisis of housing supply and affordability. In addition, much of this 'greenbelt' land is not used for public amenities but instead for private farming with *negative* effects on the environment[28].

in order to effectively reduce informality and sprawl, attempts at limiting fringe development need to be met with policies and sufficient investment to **encourage greater residential density** within the city. This is needed to effectively house those currently informally settling on the outskirts. Without doing so, a green belt will likely be resisted and ignored, or, if effectively enforced, will raise house prices in the city and significantly reduce affordability. Those unable to afford to live in the city limits will be forced to live even further out beyond the green belt, raising commuting costs and emissions or isolating communities from economic opportunity.

[27] For more on the impact of urban greening on resilience in a city, see Cities that Work Framing Paper on 'Embedding resilience: city responses to acute shocks and chronic stresses'
[28] Paul Cheshire, 'Greenbelt Myth Is the Driving Force behind the Housing Crisis', *LSE* (blog), 2013.

2.4. How can policymakers plan around central informal settlements?

Where high central density does exist in middle income cities, it is often in the form of **informal settlements.** Global estimates suggest that 23% of the world's population lives in informal settlements[29].



Kibera, the largest informal settlement in Nairobi (Photo: Valter Campanato, 2007)

These informal settlements represent a vital source of housing for the city's low-income workforce. Furthermore, their dense social and economic networks can offer important mechanisms of urban integration for rural-urban migrants who may use these settlements as a first point of entry into the city.

However, their illegality and absence of planning often mean problems of **poor infrastructure** and **weak land rights**, which in turn frustrate the potential for rising productivity and liveability. Given the political difficulties associated with either regularising or resettling informal settlements, inertia has been a common policy response. However, this policy inertia has only served to maintain and indeed replicate the status quo. As a result, the global population of informal settlements is set to double in the next 15 years.

Whilst the proliferation informal settlements can only be adequately addressed by effective affordable formal housing provision, policymakers still need to plan around existing informality. Options for improving existing informal settlements can broadly be divided between slum-upgrading, resettlement and land readjustment[30]:

- Where policymakers are content to retain land under residential use, participatory ***in-situ* slum upgrading** is a cost-effective solution that can enable informal settlements to incrementally transform into poor but highly liveable neighbourhoods, integrating the city's low-income workforce into the urban fabric. Additional policies to promote affordable housing in these areas may be necessary, however, if governments wish to prevent gentrification resulting from upgrading programmes.

- Where informal settlements are located on land that is either unsafe for habitation or needed for vital urban infrastructure, **resettlement may be necessary**. Resettlement can also be used as a tool for urban renewal or the creation of business clusters. In these cases, the value gain for the city as a whole in converting land to more efficient

[29] United Nations, 2017, https://unstats.un.org/sdgs/report/2017/goal-11/.
[30] For more on policy to address urban informal settlements, see *Collier, P., Glaeser, E., Venables, A., Manwaring, P., and Blake, M. (2018) "Policy options for informal settlements" Version 1. IGC Cities that Work Policy Brief.*

uses and boosting employment must be weighed against the high costs to residents in terms of socio-economic dislocation. The other major cost that needs to be taken into account is that to governments of financing the rehousing of displaced residents in well-connected locations.

- Where strong land administration systems are in place, **land readjustment policies** could offer a promising way of facilitating large-scale infrastructure provision, whilst simultaneously resolving tenure disputes. Land readjustment schemes pool together landholdings and redesign a new neighbourhood layout to facilitate infrastructure provision and resolve plot disputes. These schemes are financed by landowners voluntarily agreeing to give up some of their land as payment to the municipality, in return for receiving a smaller but higher-value land plot with infrastructure access. Such policies have been practiced widely in East Asian economies[31]. For more on land readjustment schemes, see Section 4 below.

2.5. Designing spatial plans according to local conditions and capacity

For firms and households to use plans as a basis for long-term investments, they need to be **credible and realistic.** This is currently not the case in many developing and middle income cities, where spatial plans fail to take into account a number of local realities. Proposals are regularly based on imported designs or colonial land use, and often include plans for multi-storey buildings and wide roads unfit for current purposes or beyond available funding[32]. The result is that these plans are largely ignored, and are unable to provide a credible anchor for private investments.

The ability to implement any urban spatial plan depends on how realistic it is. This means taking into account existing land use in a city, administrative, political and financial constraints, and realistic forecasts for urban population growth. A flourishing central business district that allows for clustering of firms and links to local labour markets, for example, can only emerge if national or local governments have the capacity to ensure land can be made available for this purpose. This applies to planning for both redevelopment of current urban land or for land being converted for urban use.

Adapting plans to local conditions

Three major factors that will affect the design of realistic and enforceable spatial plans are:

1) **Government budgets for public investments** outlined in plans. Realistic planning for public investments requires a clear understanding of budget constraints for this.

2) **Income levels.** If plans are designed without taking into account how affordable they are for citizens to comply with, they are unlikely to be realistic. Plans that assume plot sizes or transport modes incompatible with current income levels are likely to simply drive more people into informal land use that contravenes official plans.

[31] Lozano-Gracia, N., Young, C., Lall, S. V., and Vishwanath, T. (2013) "Leveraging land to enable urban transformation: Lessons from Global Experience" World Bank Policy Research Working Paper 6312
[32] For more on unrealistic urban planning and how to overcome these, see UNHABITAT (2013) 'Urban Planning for City Leaders'

Instead, plans should be able to accommodate housing that is affordable to the majority of citizens.

3) **Existing, particularly informal, land use.** It is politically and administratively easier to enforce master plans that closely reflect existing use of urban land. In designing a master plan, therefore, policymakers face a trade-off between long term goals for urban development that may require significant changes to current land use to improve efficiency, and political and administrative resistance from current residents who are unable or unwilling to adhere to new regulations.

Adapting level of detail of plans to local enforcement capacity

Even well designed spatial planning requires effective implementation to improve efficiency and liveability of urban land use. National or local capacity to enforce urban land intervention is an integral factor to consider in designing master plans. If administrative capacity to implement, monitor and enforce spatial plans is low, it may be more realistic to adopt a more **strategic planning** approach, where planning doesn't try to cover all parts of a city but on certain key structuring investments.

3. Should density regulations be implemented to improve land use in a city?

Density regulations place a cap on the quantity of property per plot of land and reduce population density in certain areas of cities. These can be divided into two groups:

1) Regulations on the amount of density resulting from crowding. This includes regulation on minimum plot sizes and floor-area ratios (FARs) that cap the ratio of floor area to plot size
2) Regulations limiting the height of buildings

Regulations on minimum lot sizes or maximum floor area ratios are widespread across developed and developing cities.

- ✓ These can be useful in coordinating land use for firms and households with their infrastructural needs. If investments in infrastructure, services and transport links cannot keep up with population growth or with plans for redevelopment, well enforced density regulation could reduce adverse effects of higher density on living standards, pollution and productivity through overcrowding, **congestion and contagion.** In Manhattan, for example, density restrictions are carefully coordinated with infrastructural factors such as street width.

- × In practice, however, density regulations are often **overly stringent**, paralysing the formal property market. In Delhi, India, the floor-area ratio of apartment buildings is usually 2 – developers are not able to build more than 2,000 square feet of floor space on a 1,000 square feet plot of land. This is in comparison to Manhattan, where the FAR can be as high as 15, or Singapore, where FARs reach 25.

High density central business district in Singapore

By reducing local housing supply and increasing plot sizes, these regulations raise land prices, pricing particularly lower income households out of the formal land market. Evidence suggests that sharp increases in housing prices in Manhattan

since the 1990s are the result not of higher increased supply costs but of density restrictions[33].

As a result, these regulations are often ignored by residents in middle income cities. In Karachi, while only 36% of the population lives in formal residences where urban density is as low as 84 people/hectare, informal settlements can reach densities of over 4,500/hectare[34]. Overly stringent density regulations encourage the emergence of informal settlements as citizens seek to live in areas where they can affordably access jobs and services.

Policymakers face a trade-off here between maintaining a decided minimal quality of life for those that can afford to live on regulated plots, and displacing those who can no longer afford to live on this land.

However, it is important to note that minimum plot sizes, unlike building material quality and construction techniques, are ***observable* to owners and occupiers**. They can therefore make informed decisions on housing based on these features. As such, there is less of a justification for public policy to regulate plot sizes on the basis of the unknown public interest.

- At the same time, density regulations by their nature result in increased urban sprawl that adversely affects the potential for **efficient land use**, while increasing **congestion, commuting costs** and **emission levels** in a city. Evidence suggests that lifting height restrictions in Bangalore, India, for example, would result in a 17% reduction in city size, reduce commuting costs, and increase household savings by between 1.5% and 4.5% of earnings[35].

In many cities, reforms to relax more stringent density regulations may be necessary to enhance urban productivity, liveability and sustainability.

In both developed and developing cities, these regulations are often held in place by **strong vested interests of current owners** who experience the benefits of higher property prices and lower crowding as a result of density regulation. Though there may be widespread benefits of reforming density regulations for a city, powerful interest groups often prevent local governments from making these changes to land use regulations. In addition to reforms to land use regulation designed at the national level, national governments can also incentivise local governments to reform locally administered density restrictions by linking municipal grants that can fund infrastructure and services to levels of development in a district; so that density does not have to come at the cost of overcrowding.

[33] Glaeser, Gyourko, and Saks (2005) "Why Is Manhattan So Expensive? Regulation and the Rise in Housing Prices"
[34] Hina Shaikh and Ijaz Nabi, 'The Six Biggest Challenges Facing Pakistan's Urban Future', *Pakistan's Growth Story* (blog), 2017, https://pakistangrowthstory.org/2017/01/10/6-challenges-facing-pakistans-urban-future/.
[35] Alain Bertaud and Jan K. Brueckner, 'Analyzing Building-Height Restrictions: Predicted Impacts and Welfare Costs', *Regional Science and Urban Economics* 35, no. 2 (March 2005): 109–25

4. Acquiring land for urban 'transformation'

4.1. Under what circumstances is compulsory acquisition appropriate for improving efficiency of land use?

Efficient and liveable cities require public and private investments in infrastructure and services that can allow for high density connected development. Many of these investments yield significant benefits for all citizens, but by their nature are not profitable for private developers to provide at socially optimal levels. In Bursa and Istanbul, cities that form part of the Global Future Cities Programme, private developers are unable to recover the costs of investing in public spaces such as parks and sidewalks. Despite the fact that these public spaces have significant benefits, they can be enjoyed by citizens without paying, and as a result, are underprovided in private redevelopment projects. As such, government ownership of land to provide these is often needed.

This is easier in some cities, such as Hong Kong, where government ownership of land is high and land is leased to private holders. In these cities, land can legally be repossessed by government at the end of leases as part of urban renewal projects and thus land rights can be more easily reassigned for redevelopment. However, similar systems of public land ownership do not exist in many developing and middle income cities.

Where governments do need to acquire land to improve efficiency of land use, this is best facilitated through **land markets**. If land is being put to a higher value use, ideally governments and developers should be able to negotiate a voluntary deal that is mutually beneficial for buyer and seller. However, because of coordination failures and hold-out problems[36], voluntary transactions do not always provide governments with sufficient land for large infrastructure projects. Furthermore, the announcement of a planned infrastructure project may actually fuel speculative investments in the land the government is about to acquire. Without legal safeguards in place, this will drive up land prices to unaffordable levels.

In these circumstances, to ensure efficient and liveable urban land use **compulsory acquisition of urban land by governments,** also known as eminent domain**,** may be required.

- ✓ Compulsory acquisition is generally accepted as legitimate when the aim is to release the land for the implementation of vital infrastructure projects or public spaces such as parks or pavements to improve a city's connectivity and liveability.

- ✓ In many cases publicly acquired land put to *private* use can also provide long term public benefits for a city. For example, land acquired for a private enterprise that provides well-paid employment to hundreds of low-income residents represents a highly important land use in cities struggling to generate large-scale employment.

[36] This refers to cases in which individual owners will 'hold out' on selling their land for prices in excess of the plot's value, as they know that they have significant bargaining power to prevent a project taking place that requires all land in an area. This can result in prohibitively expensive costs of land acquisition for a project.

In Singapore, reforms to British colonial land acquisition laws played a pivotal role in the country's development path, enabling acquisition of land not just for infrastructure, but also for public housing and industrial parks. By contrast, in India, legal challenges in using eminent domain for commercial purposes means acquiring land for large-scale industry is a lengthy and costly process.[37]

- However, it is important to note that eminent domain is subject to potential abuse. Historically, many urban regeneration projects have been implemented simply for urban beautification or abstract notions of 'modernisation'. In many cases, these projects have done little to boost wider urban productivity or to improve the lives of previous residents who are expensively resettled in disconnected locations.

  Such resettlements have often occurred in the run-up to high profile international events. For example, in Bangkok, in 1991, in anticipation of a World Bank and International Monetary Fund (IMF) international conference, the government forcibly removed over 2,000 residents from areas surrounding the conference centre.[38] It is less clear that such resettlements meet legitimate public purpose objectives.

- Land acquisition also comes with **significant costs** to those displaced, and/or to government. As a result, policymakers often face significant political resistance to compulsory land acquisition programmes. To effectively address this challenge, **adequate compensation** for the loss of social networks and local employment opportunities in the relocation process is needed. Where displaced households have received insufficient compensation, resettlement policies have led to wide-scale homelessness and social unrest.

4.2. How to effectively implement land acquisition?

What is an adequate level of compensation?

To limit the costs to those displaced and reduce the associated resistance, compulsory land acquisition programmes need to provide **appropriate compensation** for both landowners and tenants. Fair compensation that allows those affected to be no worse off should include:

- **Payment to landowners at the market value of their land and property *before* redevelopment projects are announced.** This prevents speculative investments made after the project is announced from driving up the price of land being acquired. Without this, governments have to pay for the increased land value that their own planned investments create. To effectively do this requires:
  - **Independent, accurate and transparent systems for valuation** both before and after announcements of urban plans. Without this, the

[37] https://www.ft.com/content/ee2fb6ec-3e55-11e5-9abe-5b335da3a90e?mhq5j=e5
[38] Greene, S. J. (2003) "Staged Cities: Mega-events, Slum Clearance, and Global Capital," Yale Human Rights and Development Journal: Vol. 6: Iss. 1, Article 6.

implementation of these plans can be stalled by lengthy disagreements and political resistance on the basis of undervaluation of land.

- **Legislation and education of judges** to ensure that payments are made on the basis of land *before* public projects are announced.

  In Germany, for example, the stage of development and value of land or property *before* public projects are announced are used to fix the compensation value[39]. By contrast, in Uganda, under the current *Land Acquisition Act*, individuals have the right to reject compensation based on market values before the planned public investment. This results in speculators holding out for higher payments than others in a community and significantly stalling or halting public investment projects[40].

Payment to landowners at the market value of their land and property before redevelopment projects are announced also enables adequate compensation to be paid to those tenants and businesses who are not the landowners, but may also be displaced by acquisition.

- Further **compensation for displacement** to resident households and businesses displaced in the resettlement process, for whom market-value compensation is insufficient to cover the social and economic costs of resettlement. This can be provided in the form of compensation for lost business profits, lost employment opportunities and relocation costs. A similar type of compensation can also be targeted towards displaced tenants. In South Korea, for example, each tenant household member receives compensation equal to three months of rental payments as well as moving expenses.[41]

In some cases, compensation may be better provided in the form of new housing, integrated with transport links and local job opportunities. In these cases, providing **well connected** housing alternatives is crucial. Across the world, from Paris to Johannesburg, relocating residents to large-scale housing developments in disconnected areas fosters a sense of socio-economic exclusion. This then results in high levels of crime and unemployment. Where enforcement capacity is weak, the majority of relocated informal residents actually **move to better located informal settlements[42].**

[39] Winrich Voss, 'Compulsory Purchase in Poland, Norway and Germany - Part Germany' (Germany: International Federation of Surveyors, 2010).
[40] Umaru Kashaka, 'Govt Explains Compulsory Land Acquisition', *New Vision*, 2016, http://www.newvision.co.ug/new_vision/news/1442286/govt-explains-compulsory-land-acquisition.
[41] Lozano-Gracia et al. (2013)
[42] Barnhardt, S., Field, E. and Pande, R. (2017) "Moving to opportunity or isolation: Network effects of a randomized housing lottery in urban India", American Economic Journal: Applied Economics: 9 (1)

Case study: Large-scale land acquisition in Singapore

As it experienced rapid economic growth through the 1970s and 1980s, Singapore used government land acquisition extensively to facilitate urban regeneration, and to implement large-scale high-rise public housing projects.

Before 1966, the Singaporean government struggled to acquire land for urban infrastructure and regeneration. This was in part due to inherited British colonial planning laws, which many former British colonies still have in place today, and in part due to the strong resistance of landlords obstructing redevelopment. Therefore, in 1966, Singapore passed the *Land Acquisition Act*, giving the state broad powers to acquire land for a variety of purposes including residential, commercial and industrial developments. Under the new Act, compensation appeals were to be made to an Appeals Board rather than to law courts. This meant that land related matters could be handled more expeditiously. In 1973, Prime Minister Lee Kwan Yew further amended the law to fix the value of land acquired:

> *"I further amended the law to give the government power to acquire land for public purposes at its value on a date then fixed at 30 November 1973. I saw no reason why private landowners should profit from an increase in land value brought about by economic development and the infrastructure paid for with public funds."*

Throughout the 1970s and 1980s, land acquisition was used extensively; the proportion of Singapore's land owned by the state rose from 44% in 1960 to 76% in 1985. This enabled key infrastructure provision and urban regeneration. However, it also frequently involved large-scale slum clearance. To overcome resistance to this, the government provided **alternative accommodation for all people and businesses displaced by land acquisition**. This came at great cost: planners at the time estimated that for every slum structure demolished, seven new individual flats would be required to relocate affected families. The government also provided educational programmes to enable relocated families, particularly those with livestock, to adjust to the challenges of high-rise living.

Singapore's land acquisition policy therefore went hand-in-hand with its large-scale public housing programme. This in turn was financed through an innovative compulsory savings scheme. Through this scheme, workers and employers were required to contribute up to 20% of wage payments each and the accumulated savings were used to fund mortgages for home ownership. High government capacity, strong trust in government, and rapid economic development were key enabling conditions for Singapore's policy reforms.

Swift and transparent appeals processes are necessary to ensure adequate compensation and prevent political resistance to land acquisition projects. This requires significant investments in the legal and administrative capacities of courts to ensure to ensure that lengthy and cumbersome appeals do not act as a significant barrier to public works projects.

In order to be **financially viable**, projects that involve land acquisition will need to weigh up in advance whether the overall costs are less than the benefits obtained through freeing up land for more productive uses

Who is eligible for compensation?

Determining those eligible for compensation is a contested issue, particularly where land rights are not legally registered. Detailed and participatory surveys in advance of land acquisition can help identify both the tenure status of affected residents, and the form and quality of their housing for valuation purposes. This can also help avoid a common problem whereby once a land acquisition project is announced, either opportunistic informal settlers enter the area and claim occupancy rights, or property developers lodge quasi-legal ownership claims over the area to obtain compensation.

Ensuring efficient use of acquired land

Even where land acquisition is justified to enhance efficiency and liveability, active urban policy is required to ensure this can be put into practice, particularly if land is being leased to private developers. The following policies can encourage efficient use of leased land:

- **Open and competitive auctions** for land plots can help to ensure land is transferred to high-value uses rather than politically well-connected companies or individuals.

- In many East Asian countries and in cities such as Bogota**, taxation of vacant or underdeveloped land** at a higher rate has helped to incentivise high density efficient land use. The revenues raised can be used to fund public infrastructure and to help finance the resettlement of displaced residents in well-connected locations. However, the efficacy of a tax on vacant land in improving efficiency of land use depends on whether there are reasons why land remains vacant beyond just inefficient land speculation. Where interest rates on loans for development are prohibitively high, for example, a vacant land tax will not be sufficient to increase investment.

- **Contractual agreements with property developers** can specify that the government can reclaim land under public ownership if left vacant for a pre-agreed time period. In Bogota, particularly stringent policies have been implemented, allowing cities to reclaim land left idle for two years and submit it to public auction.

4.3. Land readjustment as an alternative to acquisition

Where compulsory land acquisition is too politically or financially costly, **land readjustment** can provide a more attractive way to increase efficiency of land use and transfer some ownership of land to governments. Governments in the Republic of Korea, Turkey, Thailand, Japan, France and Germany, for example, have all successfully used land readjustment schemes as a tool for effective urban planning.

Under readjustment schemes, governments pool together privately-held land plots, and this land is made more efficient through:

- Creating a new land use plan for the area
- Providing necessary public infrastructure on a portion of this land
- Coordinating and facilitating private exchanges between owners to allow for more contiguous ownership

After public infrastructure is supplied, the remaining land is reallocated to owners in proportion to their land plots before readjustment. As land values in the area rise due to better planning and infrastructure provision, private landowners are willing to give up some of their land to the government. Governments are able to acquire selected, strategic land parcels which can either be used for the planned infrastructure investments, or leased or sold to recover the costs of delivering infrastructure.

Urban land readjustment is most commonly used for converting peri-urban or rural areas to urban use. However, it can also be used within existing urban areas for redevelopment. In the Republic of Korea, land readjustment was used extensively both for urban expansion and for redeveloping areas which had emerged through unplanned settlement. More than half the land area of the capital, Seoul, was redeveloped in this way[43].

[43] Schnidman, Frank. 1998. Land Readjustment. *Urban Land* (February).

The extent of government involvement in land readjustment can vary:

- In Germany, *Umlegung*, the planning and implementation of the rural land readjustment process, is led by local authorities and mandatory for landowners.
- In France, by contrast, landowners are largely responsible for readjustment and carry out planning and implementation through collective decision making within broad outlines agreed on by government officials.
- Land readjustment projects in Japan can be initiated by a consensus of private actors or by local government, with publicly initiated projects mandatory for landowners.

When compared to land acquisition, land readjustment schemes have a number of significant potential benefits in delivering infrastructure and re-planning urban areas:

✓ **Limited government finances required.** Land readjustment allows for planning and infrastructure delivery at lower costs. This is because governments not only do not need to compensate current landowners for their land, but landowners also in effect pay for some of the planning and infrastructure delivery by giving up parts of their valuable land.

Case study: private contribution in land readjustment schemes in South Korea and Japan

In South Korea, landowners agreed to give up 30% of their land to make space for infrastructure and public spaces, and a further 20% to cover the costs of the infrastructure itself. These enabled public investments in infrastructure and public spaces to be largely self-financing[44].

This is far greater than the land payments made in Japanese land readjustment programmes, where 20% of land was contributed towards public spaces and 10% for infrastructure costs.[45] Consequently in Japan, readjustment programmes require higher levels of government subsidies in addition to land payments.

✓ **Limited displacement of residents.** Land readjustment schemes allow current residents to remain within the area being planned and minimises displacement of large populations. As a result, land readjustment in Japan, where there is a culture of strong ownership rights as well as a high degree of organisation and political influence among Japanese farmers, have been far more successful than land expropriation[46].

✓ Land readjustment can be seen as **fairer** and thus more acceptable than other forms of urban land use intervention in that the costs of planning are borne to a great extent by those who receive the benefits from the scheme.

[44] Lozano-Gracia et al. (2013)
[45] Lozano-Gracia et al. (2013)
[46] Lozano-Gracia et al., 'Leveraging Land to Enable Urban Transformation'.

- The process of pooling together land and redesigning the neighbourhood layout can **help to resolve ownership disputes.** This can apply not only to small-scale boundary disputes, but also to larger-scale contested ownership claims between long-term informal occupants and legal landowners. This is because informal long-term occupants can be resettled in higher density accommodation, freeing up that was previously unusable by the official owner for high-value commercial or residential use.

Case study: Land readjustment enabling low-income housing in Thailand and South Korea

In Thailand, South Korea and India, the process of pooling land together has enabled large-scale land-sharing agreements, whereby informal occupants agree to relocate in formal on-site high-rise housing while the rest of the land is freed up for the official landowner to use for commercial purposes.

In Bangkok in the 1970s and 80s, official landowners themselves agreed to fund 3-5 storey low-income housing developments for informal occupants in return for reclaiming part of their land back. In one such land-sharing agreement, increased population density enabled the residential area of the slum to decrease from 8.50 hectares to 2.40 hectares. The rest of the land was then able to be used more efficiently for a commercial complex. The value of the freed-up land for commercial uses was sufficient to cover the company's construction costs of new housing units for slum dwellers, which were issued on 20 year leases – a win-win for the landowner and for formally housed residents.

In South Korea, freed up land from land readjustment is also used to fund low-income housing; in the 1980s, this constituted 30% of the government's low-income housing budget.[47]

Challenges of land readjustment

The ability of land readjustment programmes to improve land use relies on:

- **Empowered implementing institutions.** Land readjustment schemes require effective and empowered implementing institutions – not least because landowners need to trust in their abilities if they are to be willing to give up substantial portions of their land. Angola offers a striking example of two diverging experiences of land readjustment schemes implemented between 2006-2008, based on differing funding arrangements for local governments:
    - In one successful scheme, the local government that implemented the project allocated 30% of land to infrastructure provision that raised surrounding land values, whilst retaining a further 35% for sale. Revenues from the sale of this

[47] Lozano-Gracia et al. (2013)

additional land went into an infrastructure development fund to cover the costs of infrastructure provision.
    - By contrast, the second scheme, initiated shortly after a new decentralisation law in 2007, did not generate sufficient resources through land value capture to sustain itself. A large part of the reason for this was that the new decentralisation law did not incentivise local governments to create surplus incomes from local sources – all local revenues reverted to central government and investments funds were instead centrally allocated to local governments. As a result, the local government instead distributed land parcels for free to those on their waiting list for land for housing. No funds were recovered to invest in infrastructure.

- **Strong legal institutions to underlie the process of land title swapping,** as well as **accurate systems for land valuation before and after readjustment.** This is to avoid controversy in reallocation of land. Land can either be reallocated on the basis of relative size, or relative value:

    - If determined by *relative size*, a pre-determined and fixed percentage of land per owner (e.g. 50%) is assumed to be needed. If more than this percentage is actually taken from any given landowner in the project, then the municipality must compensate the landowner for extra land taken at the market value. If less than this percentage is taken, the landowner must pay the municipality for land not taken through betterment fees[48].
    - If determined by *relative value*, the land payment for each individual land owner is calculated such that they keep a land-holding of the same, or slightly higher, value as before the scheme.

  Payment by relative size is administratively easier to calculate, particularly where land valuation systems are weak, as the same percentage of land is contributed by each landowner. However, this can be perceived as less fair than payment by relative value in cases where some owners are required to contribute much more valuable land than others. This may be fairer in cases where land values are relatively homogenous across the project area.

- **Effective means of participation.** If landowners are allowed to play a part in the design of plans for their area, it is more likely that such plans will incorporate local knowledge of land use, as well as reflect local needs and aspirations. This will be extremely useful in overcoming existing inefficiencies. More participatory land readjustment can be easier to implement, whilst fostering relationships for further public-private-community partnerships for land management[49].

1) **Strong enforcement capacity.** Although land readjustment schemes are typically implemented with the aim of neighbourhood-wide comprehensive upgrading, there

[48]These refer to fees charged to land or property owners based on the increase in the value of their land or property that results from surrounding public investments

[49] UNHABITAT aims to promote more participatory land readjustment that engages all stakeholders from an early stage through Participatory and Inclusive Land Readjustment (PILaR). For more information on this, see https://unhabitat.org/participatory-and-inclusive-land-readjustment-pilar/

will likely be winners and losers in the process. Some landowners may also seek to free-ride off the communal infrastructure provided without giving up any of their land, and therefore tactically oppose the scheme. This creates a need to enforce land readjustment for the collective good.

What level of consent legitimises enforcement of these schemes?

The level of consent required to implement readjustment schemes may depend on who initiates the land readjustment process. In Japan, South Korea and Taiwan, land readjustment can be initiated by governments or by landowners themselves. If it is initiated by governments, participation is mandatory, although in practice there is often strong collaboration with landowners. If land readjustment is initiated by landowners, then a minimum level of compliance is required for it to be implemented. In Taiwan, 50% of owners, measured by area and by number, must agree to the project, whereas in Japan and South Korea this figure is 66%. This reflects the more participatory, bottom-up nature of the land readjustment process in Japan and South Korea.[50]

The process behind land readjustment is highly specific to the local area, and is best developed organically through practice. This is not only because land ownership norms and preferred neighbourhood plans are area specific, but also because discussion and local dispute resolution are fundamental parts of the process.

[50] Lozano-Gracia et al (2013).

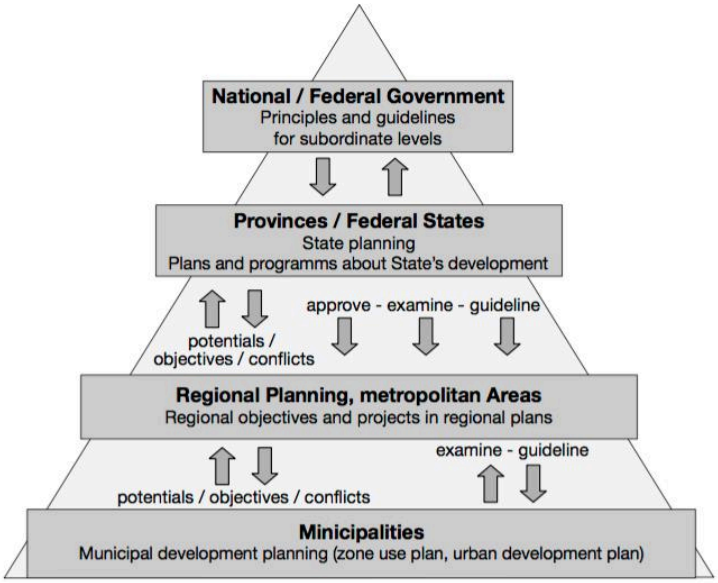
5. Cross-cutting ways to improve urban planning design

Across all aspects of urban land use planning, policymakers can implement reforms to improve evidence-based policy that can be realistically implemented to achieve strategic goals. In particular, local research and monitoring, investment in planning capacity, and coordination of different government stakeholders involved are crucial to effective planning.

5.1. Clarity and coordination of mandates of different government agencies and private providers

In any country, different instruments of land use planning may be designed and implemented by a **number of different departments and levels of government**. To effectively influence urban land use, policymakers across these agencies will need to need to coordinate regulations to achieve a common spatial goal and **delineate which government agencies are responsible for different aspects of land use planning** in order to prevent confusion, contrary regulation and inefficiencies.

In many middle income cities, overlapping and unclear mandates for urban land use planning result in lack of clear accountability and conflicting implementation of different land use plans. Effective coordination of government agencies involved in planning can result in dramatic improvements in urban land use.



Effective vertical integration of planning between government departments
Source: GTZ, 2004[51]

In cities in Turkey that fall under the Global Future Cities Programme, clear hierarchies of spatial planning allow for detailed implementation plans designed at the district and sub-district level to be consistent with legally binding *Environmental Order Plans* designed at the metropolitan level. These are in turn consistent with more strategic regional plans.

At the same time, in addition to coordinating planning across government, departments involved with urban land use planning will need to actively engage and coordinate with government agencies and private companies involved in designing and providing public

[51] GTZ, *Land Use Planning and Urban Transport*, 2004.

infrastructure such as roads, electricity and water and sanitation to allow for effective spatial coordination and public infrastructure provision.

Metropolitan governance and spatial planning

In a number of cities, even where there are clear responsibilities given to municipalities regarding the design and implementation of land use plans, there is no clear mechanism for coordination between these municipalities for city-wide planning. This is a missed opportunity for municipal governments to invest in complementary infrastructure across districts and to effectively allocate land to different uses across a city as a whole. A dedicated agency responsible for planning at the metropolitan level can help to overcome these issues.

The changing nature of 'urban' boundaries

Clarity and coordination of institutional mandates in a way that can effectively respond to urban demands is particularly important given the changing nature of actual 'urban' boundaries over time. Although administrative urban boundaries may be fixed, residential and commercial development that is geographically or economically linked often extends far beyond these. Without effective allocation and coordination of responsibilities and resources between municipalities in a wider metropolitan area, there are likely to be mismatches between citizens' needs and the mandates of authorities.

5.2. Locally specific research and data collection

In many developing cities, urban planning is done without sufficient accurate data and local research. As such, plans become **divorced from the reality of social, political and economic circumstances in cities**. The outcome is that they fail at the level of local implementation[52]. In many cities, improving land use policy requires significant investment in collecting and maintaining:

- Geospatial data on what exists and where, as part of Geographic Information Systems (GIS)
- Data on land use, socioeconomic variables, housing prices, investment trends and environmental conditions in a city.
- Qualitative data, based on research undertaken in partnership with local organisations including the private sector and civil society. This is to both to ascertain potential future land use, as well as to understand local interests and desires regarding land use. It is particularly important to understand the activities and aspirations of powerful informal actors who are likely to prevent formal regulation being enforced.

On the basis of this evidence, urban land use planners can have informed discussions of how to improve efficiency, liveability and sustainability of land use in a way that more accurately reflect the needs of residents.

[52] Wekwete (1995) "Planning Law in Sub-Saharan Africa - A Focus on the Experinces in Southern and Eastern Africa*"

Effective use of data crucially relies on technological and institutional coordination to combine datasets where useful for policy including on housing, land use, and transport flows. In cities such as Recife, for example, there is limited standardisation and integration of data that is collected by multiple municipal departments. By contrast, national coordination of urban data centres in the Netherlands is supported by the national statistics institute (CBS) in getting access to a wide range of existing datasets[53]. This may require putting in place data standards to ensure comparability of data for different uses.

Technology and big data

New technology is providing new ways of gathering data for planning and sharing information with citizens. Increasing use of mobile phones and smart cards, for example, offer a rich source of 'big data' from which to monitor development and activity in the city in real time. Big data on transport flows, for example, can be used to improve spatial planning while also providing commuters with up-to-date information on areas of congestion[54]. However, to effectively leverage big data for policy requires:

1) Technological systems in place to capture data
2) Adequate training for staff in analysing big data for policy
3) Clarity of data use and ownership of data when working with private sector partners in the use of technology for data collection
4) Specific strategies to gather data on, and provide data to, individuals who lack access to digital services, such as the elderly or young children, to address their needs
5) Adequate legislation in place to protect data privacy where data is personalised.

The particular need for research into marginalised groups for land use planning design

In particular, effective urban land use planning requires additional research into the use of land by marginalised groups, including the elderly, those with disabilities, and women. Women's experiences and use of infrastructural investments such as those in transport differ from those of men, for example, and different layouts of a city may offer different benefits and costs to the two groups. Gender-blind spatial planning for transport often fails to consider that women have very different patterns of urban work and are less likely to travel to city centres during peak hours but instead participate in part-time work on the outskirts of a city[55].

Monitoring and evaluation of land use planning for further improvements in design

In order to allow for evaluation and improvement of land-use plans over time, regularly updated data is also needed on:

[53] For more information on data for urban planning, see Landry, Jean-Noé (2018) 'Data Systems for Urban Planning and Land Management' UNHABITAT.
[54] For more information on the use of data for transport reform in particular, see *Cities that Work* cluster paper on 'Data-oriented urban transport reform in middle-income and developing cities'
[55] Locke and Henley (2016) "Urbanisation, Land and Property Rights."

- The level of implementation of plans and regulation (which can be obtained from building permit surveys, land surveys, satellite data and interviews).
- Actual outcomes of implementation e.g. on affected individuals, land and buildings, including land and property prices. Environmental Impact Assessments (EIAs), for example, can be undertaken to determine the environmental effects of particular projects and regulations.

This can be compared with initial assessments of the potential impact of urban plans on a range of outcomes, including housing availability, job creation, and the natural environment. In this way, urban land use plans can be designed to more accurately achieve their goals over time.

Effective systems of land valuation **are therefore an important tool to aid in the effective use of urban land use planning**; with functioning land markets, some of the effects of land market interventions can be captured through their effect on land and/or property values.

5.3. Public participation in planning

At the same time, bringing together stakeholders from the public to provide their input into planning priorities on the basis of this data is key. By engaging with citizens to use their extensive knowledge of local conditions to gain information on current urban land use, urban land use planning can be made **more realistic** and **better address the needs of local communities**.

In many cities, community involvement to understand local constraints and desires for urban land use is encouraged through workshops and town meetings. However, meaningful participation and contribution in the design of regulation is often low. Furthermore, these efforts may inadvertently provide increased opportunities for powerful interest groups to influence policy outcomes in their favour. Improving the effectiveness of public participation in practice requires further efforts to:

1) Invite and encourage attendance from representatives of a range of interest groups
2) Educate community members on planning processes, goals and instruments
3) Precisely define objective so communities can hold governments accountable for future change

6. Ensuring compliance with land use plans

Across middle income cities, there is significant evidence of weakly implemented land use planning systems. In Nigeria, for example, unrealistic urban plans, coordination failures in administering regulation and public apathy towards planning institutions mean that there is limited compliance with existing land use regulations[56]. The result is urban sprawl, inadequate housing and high levels of congestion in cities like Lagos that form part of the Global Future Cities Programme.

Most important in ensuring that land use plans are implementable is that they are ***realistic***, i.e. designed in such a way that they do not make excessive demands on citizens or enforcement agencies. However, even well designed urban land use regulations need effective procedures for implementation to improve efficiency and liveability of urban land use. There are three main ways in which compliance can be enhanced:

1) Increasing costs of delinquency
2) Reducing costs of compliance
3) Building support for planning

6.1. Increasing costs of delinquency

Increasing the potential costs of not complying with regulations involves building up enforcement capacity, ensuring that those responsible for enforcing regulations are incentivised to do so, and implementing wider legal sanctions.

Many local agencies responsible for implementing urban land use plans lack the skills and level of staff required to implement urban plans. Therefore, for implementation to be effective, investment is required in:

- Providing **logistical support and training** to local and municipal authorities in implementing urban land use plans. This is particularly important in peri-urban areas where implementation of land use regulation is often complicated by existing informal land governance structures (see below on collaboration with local communities and leaders).
- **Increasing staffing**. Lack of staff capacity can seriously constrain enforcement of urban land use plans by reducing the ability to monitor urban land use.

In addition to these, incentivising enforcement requires sufficient **remuneration of implementing local authorities** to discourage corruption and increase the likelihood of staff implementing urban land use regulation.

Wider **legal reforms** can also reduce the ability of delinquency in land use sustained by lengthy court cases.

[56] Arimah and Adeagbo (2000) "Compliance with Urban Development and Planning Regulations in Ibadan, Nigeria"

6.2. Reducing costs of compliance

High costs of compliance, in the form of **administrative costs, delays and highly complex regulation**, are likely to increase non-compliance with urban land use regulations, especially in cities where per capita incomes are low. There are significant costs and delays involved in the administration of securing planning permissions in many developing and middle income countries. These costs of compliance can be reduced by:

- Improving **transparency and accessibility** of regulations to reduce delays in accessing information on plans and in processing permits for development. In Swaziland, for example, zoning maps and information are made publicly accessible so that builders are able to access information on regulations and design requests for construction permits with these regulations in mind before submitting applications. This is in contrast with land use planning systems in Belize and the Bahamas, where zoning plans are accessible only by building permit authorities who must check the compliance of building application only after it is submitted.

  This is not just about making plans publicly available, but also making sure they are easily accessible. In Kigali, many city dwellers are not aware of what is planned for their surrounding areas despite the master plan being available online, because many individuals do not have the skills to access this information. This results in a number of denied construction permits because proposed structures do not fit with the master plan[57]. As such, the City Construction One Stop Centre, a government institution, is working on providing a mobile phone-based communication service whereby residents can find out master plan information for their plot by texting in the plot number[58].

- In addition, **training and increased staffing of land use planning departments** can also improve efficiency of implementation. This can help to reduce delays associated with obtaining permissions.

- **Reducing complexity** of land use regulations. In India, for example, following land readjustment in peri-urban areas landowners still require up to 14 different "no objection" certificates before being allowed to use land for non-agricultural purposes. It is estimated that for every 100 square miles of agricultural land allocated for urban residential use, only 20 square miles are used for this purpose. The rest is tied up in complex regulatory processes[59].

6.3. Building support for planning

Communication and transparency of land use regulations, as well as collaboration with local communities in implementation, are two key ways in which local support can be built for land use planning, to allow for easier enforcement.

[57] Jean Mugabo, 'Most City Residents Ignorant of Kigali Master Plan', *The New Times Rwanda*, 2015, http://www.newtimes.co.rw/section/article/2015-01-20/185129/.
[58] Mugabo.
[59] Bishwapriya Sanyal and Chandan Desuhkar, 'Town Planning Schemes as a Hybrid Land Readjustment Process in Ahmedabad, India' (Lincoln Institute of Land Policy, 2012)

Communication and transparency of land use plans

Public communication drives can help to increase awareness and understanding of regulations among the public (and those responsible for implementing them) in order to enhance support for these regulations.

- By providing opportunities for discussion and **feedback**, policymakers can encourage local ownership over these plans.
- Gathering **data for monitoring and evaluation of existing successes** can also help here in communicating the benefits of regulations for citizens.

In Guatemala City, a land management plan was introduced in 2009, with a new zoning system established based on existing use of land. This included some mixed use zones across 6 different areas of the city, as opposed to the earlier system of single-use zoning. The planning process was **widely publicized** and developed with **strong participation from the private sector and members of the public** to ensure accuracy as well as political feasibility. This allowed the government to overcome political resistance from individuals concerned about negative externalities associated with mixed land use.

Increasing communication and transparency of urban land use plans has the added benefit of **limiting elite capture of urban land use plans**. Existing owners of residential and commercial buildings have an incentive to limit construction at the expense of wider social benefits, as this raises prices of their own assets and reduces crowding. Designing plans that reflect the interests of this elite due to their greater political influence may have long-term negative consequences on efficiency of land use and the liveability of cities for the poor. This is seen across developed and developing countries; in Manhattan, for example, effective opposition of new construction by existing homeowners has resulted in excessive density regulations. Transparency of plans and their aims can help to improve accountability to **a wider range of interests**.

Collaboration with local communities and leaders in implementation

Where possible, land use planning can be more effectively implemented by collaborating with local communities. By encouraging **participatory community management** of implementation within existing, often semi-informal, governance structures governments can harness existing monitoring and management structures. This can provide a cost-effective alternative in cases where government administrative capacity is weak, **reducing costs of staffing and monitoring** land use.

By including local communities in urban land use implementation, such plans are less likely to face political resistance. This is because collaboration provides greater levels of public awareness, ownership and transparency surrounding the implementation of urban plans. This is particularly important for peri-urban land on the outskirts of a city that is being formally reassigned to urban land use.

7. Land use planning and financing for urban development[60]

7.1. Planned infrastructure requires financing

Land use planning and the investments in infrastructure that this planning entails, require significant public financing. There are a number of ways in which governments can finance the infrastructure and services that will improve liveability and productivity in cities[61]. For large infrastructure projects, some level of financing that comprises a mix of public or private debt will usually be required. To both ensure that this debt remains financially sustainable and to reduce risk premiums, governments will need to explore options for long term funding of infrastructure. There are two types of funding instruments that may be particularly important to think about for financing planned infrastructure:

- Land value capture instruments, such as **land and property taxes** and **betterment fees**. Urban land value capture offers an ethical and efficient source of revenue for cities to fund themselves. Increased land values in a city that are the result of better planning and infrastructure investment can be captured for the public good. In Bogota, up to half of the city's arterial road network has been funded by betterment levies charged to land owners on the basis of rising land values[62]. In cities such as New Clark City, Philippines, leveraging rising land values on surrounding privately owned real estate as a result of public investments in parks can help governments to finance mixed income housing in surrounding areas. Through the Global Future Cities Programme, the city is exploring options for land value capture to help **address worries about gentrification** that come with urban redevelopment projects.

- **User fees** for transport, water and other services can also help to cover the costs of planned infrastructure and services whilst at the same time managing demand for this infrastructure. Cross-subsidisation can allow these fees to recover some percentage of costs whilst not overly restricting access to services for low income households.

7.2. Planning instruments can yield finances for municipal governments

It is also important to note that when implemented effectively, planning instruments and formal permissions can themselves offer a source of additional financing for governments:

- Exactions can be levied on property developers in exchange for planning permissions to be granted. In cities such as Quito, Ecuador, simply converting a piece of land from being officially rural to 'urban' is estimated to increase its value

[60] For more on financing for urban planning, see forthcoming FCO Future Cities Paper on Financing for Urban Development
[61] For more information on options for financing, see Global Future Cities Framing Paper on Financing and Funding for Cities and Cities that Work content on municipal finances: https://www.theigc.org/citiesthatwork/municipal-finances-urban-governance/
[62] Maria Camila Uribe, 'Lessons from the Betterment Levy of Bogotá', Paper Presented at "Unlocking Urban Land Values for Infrastructure Finance" Seminar Organized by the India Urban Space Foundation, 2009.

five-fold[63]. Cities can negotiate fees for such conversions to enable a win-win for the city and the landowner. These exactions can be in the form of fees, or in in-kind contributions of land for public facilities such as parks or schools. In Rio de Janeiro, office developers in the downtown area were required by the municipality to renovate a nearby historic building and invest in tank storage for rainwater runoff. In Guatemala, under the *Impacto Vial* instrument, developers have to pay for improvements to roads that are needed due to the impact of their development on local traffic conditions. Developers then pay the difference in future if this is underestimated[64].

Case study: Auctioning building rights: CEPACS in Sao Paolo

In Sao Paolo, the municipal government has developed an innovative way to capture land values in planned areas for redevelopment. The city government issues *Certificates of Additional Potential Construction* (CEPAC) bonds, which are bid over by private developers in exchange for the right to develop at a higher FAR than would otherwise be allowed. Revenues from this are used to fund public investments in transport and housing in the redevelopment area. These bonds have allowed the city to raise approximately USD$2 billion between 2002-2014[65].

- As described above in the section on zoning, governments can also implement schemes to allow developers to build above a certain FAR or density level in exchange for the developer contributing towards or actually constructing affordable housing units.

- In Brazil, municipalities charge developers for additional building rights above a minimum set FAR level, based on the idea that further development will require higher levels of supporting surrounding public investment.

However, for both of these the additional financing or provision of infrastructure will need to be weighed against the costs of distorting housing markets in the first place through restrictive density regulations.

[63] M. Smolka, 'Implementing Value Capture in Latin America: Policies and Tools for Urban Development', Policy Focus Report Series (Lincoln Institute for Land Policy, 2013).
[64] Smolka.
[65] Leão Serva, 'How São Paulo Uses "Value Capture" to Raise Billions for Infrastructure', *CityLab* (blog), 2014, http://www.citylab.com/cityfixer/2014/05/how-sao-paulo-uses-value-capture-to-raise-billions-for-infrastructure/371429/.

8. Concluding remarks

Urban land use planning is key in determining whether a city becomes a platform for national prosperity and rising living standards. There are a number of decisions that policymakers face in designing and implementing urban planning regulations that can either help of hinder economic transformation. Realistic plans designed using local data and which are consistent with strategic plans for urban development can help to effectively anchor expectations and coordinate investments. At the same time they can also limit negative external effects of different land uses in a city. Forward thinking land use planning can also help to ensure that there is sufficient land allocated to necessary public investments in roads and in crucial public spaces that enhance the quality of life in cities. While density regulations can play an important role in balancing development with infrastructure provision, reforms to restrictive density regulations can help to unlock affordable housing provision in cities that are currently unable to meet formal standards.

Making room for public investments in currently developed areas is crucial to implementing urban land use plans in middle income cities. While this is best achieved through active land markets, in some cases it will require land acquisition by governments. In doing so, governments will need to ensure that the proposed aims for redevelopment outweigh the significant costs that redevelopment can have. This includes both costs for those displaced as a result of the resettlement, as well as costs for government in the form of compensation. Land readjustment schemes can offer an attractive alternative in providing governments with the land needed for public investments in exchange for better planning and infrastructure.

Across all aspects of urban land use planning, effective investments in the collection and use of data are crucial in middle income cities where technological advances reveal new sources of data for planning.

Recommended further reading

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