

An aerial photograph of a suburban neighborhood. The image shows a grid of streets, numerous houses with grey roofs, and green lawns. In the upper portion, there are larger green spaces, possibly parks or undeveloped land, and a body of water. A semi-transparent white rectangular box is overlaid on the top half of the image, containing the text. The text is in a bold, black, sans-serif font.

Principle 1

Plan for Growth, Resilience,
and Preservation



Principle 1

Plan for Growth, Resilience, and Preservation

Plan for compact growth and resilience while preserving natural ecologies, agrarian landscapes, and cultural heritage sites

GOALS

1A Create a compact metropolitan form that facilitates preservation of ecologies, agrarian landscapes, and heritage sites and avoids climate hazard zones

ACTION 1: Establish a rational growth target and economic development strategy

ACTION 2: Establish an urban growth boundary (UGB) enforcement mechanism and periodically update it based on economic growth projections

1B Prioritize redevelopment and infill development in areas safe from climate change hazards

ACTION 3: Assess and designate redevelopment sites based on minimum density, decay, hazard designations, and economic development needs

ACTION 4: Create incentives to prioritize infill and redevelopment in climate hazard-free zones

1C Preserve ecological, agricultural, historic, and cultural resources.

ACTION 5: Map historic, cultural, and ecological resources

ACTION 6: Map productive agricultural lands and assess rural villages

METRICS

1.1 Urban Growth Boundary

Establish a 20-year urban growth boundary that maintains adequate developable land for the projected future population and economic growth based on environmental assessments

1.2 Redevelopment

Adopt a citywide redevelopment strategy for areas of blight, transit-oriented development sites, and economic redevelopment opportunity

1.3 Resource Preservation

Adopt a preservation strategy for historic, cultural, and ecological assets

1.4 Agriculture and Villages

Rank and designate productive agricultural lands and rural villages appropriate for preservation.

RATIONALE AND CHALLENGES

The foundation of any regionwide plan must value and strategically preserve critical agrarian assets, ecological resources, and cultural heritage sites while providing designated sites for population and economic growth. Mapping and incorporating these areas into a growth strategy is critical. In addition, maintaining density in new growth areas while providing adequate land for new development is a critical balance in smart growth strategies. Identifying and targeting key infill and redevelopment areas can enhance overall regional density while reinforcing development in accessible areas.

The use of urban growth boundaries can help achieve compact development, preserve farmlands and environmental assets along with enabling conditions for shorter commutes, while supporting greater use of transit, walking, and biking. UGBs can prevent sprawl in all of its forms and other worst outcomes by protecting agricultural land, reducing traffic problems, and decreasing air pollution. Compact mixed-use development increases the efficiency of public infrastructure and is best supported by growth boundaries. This compact growth strategy can increase the value of the built environment while reducing housing and transportation costs.

UGBs should become a required element of every city and regional plan. They have been used throughout the globe to limit sprawl, preserve natural and agrarian landscapes, and catalyze compact cities. Without them, cities tend to sprawl outward, often with low-density development, consuming natural landscapes and precious farmlands and exacerbating infrastructure and transit challenges.

Regional growth policies and UGB are more than boundaries. They establish primary agricultural preservation areas, identify water bodies and important ecologies, and designate historic and cultural sites while noting hazard zones. They

also identify the unique role of the city in the region and its relation to surrounding towns. A key goal of these growth plans is to develop the physical infrastructure to support economic development and satisfy population growth with adequate and efficient infrastructure. A key element of smart growth strategies is a minimum population density within cities: 10,000 population for every square kilometer of urbanized land.

The need for environmental and ecological preservation at the edges of urban agglomerations comes in various domains and priorities. For example, preserving food security is a principal concern of China's central government. There are fewer farms in China per capita than in almost any other country.¹ In many coastal cities, preservation of surrounding ecosystems such as wetlands and Mangrove forests can play an important role in storm and flood protection. In other cities, upland areas provide critical watershed and aquifer recharging roles. Forest lands provide critical carbon sequestration banks aiding reductions in climate change impacts while habitat and complex ecologies provide countless benefits to local systems and global needs. For every unique context, growth boundaries can support the preservation of these valuable yet vulnerable environments.

Preservation of key natural and human assets, limitation of sprawl, and the creation of compact efficient urban forms is critical in any part of the globe, rich or poor, fast-growing or stable. This principle formalizes these standards with the application of planning policies or an UGB for a specific population and job growth targets over a specific time frame. Once established, the UGB can be modified only if and when the population targets are expanded and no additional capacity for infill and redevelopment is available within the boundary. Consequently, UGBs require a thorough evaluation of projected population growth as well as a clear and agreed upon vision for a city's growth.

BENEFITS

ECONOMIC

Avoids the hidden costs of sprawl: Low-density development patterns cost the U.S. economy \$1 trillion annually due to lost productivity and worsened health, especially from increased rates of obesity.²

Reduces infrastructure costs: By concentrating development, governments can more efficiently provide public infrastructure.³ In contrast, sprawl means lower rates of utilization and higher per capita costs.

Improves land-use efficiency: Compact growth increases property values.⁴ It also increases the productivity of urban land use as measured in economic output per square kilometer.

Lowers transportation costs: While higher property values are good for developers and property owners, higher housing costs impose challenges for homeowners. With proper transportation policies, compact development can improve overall affordability as measured by housing plus transportation costs.⁵ In many developing countries, the working poor are penalized with long expensive commutes from remote areas and poor transit options.

ENVIRONMENTAL

Protects natural resources: Development in and adjacent to developed areas that already have the needed infrastructure can help prevent sprawl while protecting natural resources such as wetlands, streams, coastlines, and critical habitat.⁶

Reduces car dependence and transportation energy demand: By 2030, urban growth boundaries and other improved urban design features, such as those recommended in these guidelines, can reduce national demand for transportation fuel by 21 percent in China. For new towns, the potential is greater, with at least 50 percent savings possible.⁷

Promotes cleaner air: Reduced transportation demand in vehicle kilometers traveled (VKT) has a commensurate reduction in air pollution.

SOCIAL

Creates community cohesion: Compact development helps bring people together while sprawl isolates individuals and households with single-use zoning.

Improves access to services and jobs: Compactness not only reduces the distances that must be travelled, but the resulting density supports a great supply and diversity of local goods and services.⁸

Improves access to mobility: Lower transportation costs can ease the burden on lower income groups. More compact development can be more efficiently served by a range of transit and shared mobility technologies.⁹



Figure P1-1: Comparison study of built-up area (BUA) in Atlanta, Georgia and Barcelona, Spain (Source: The New Climate Economy)

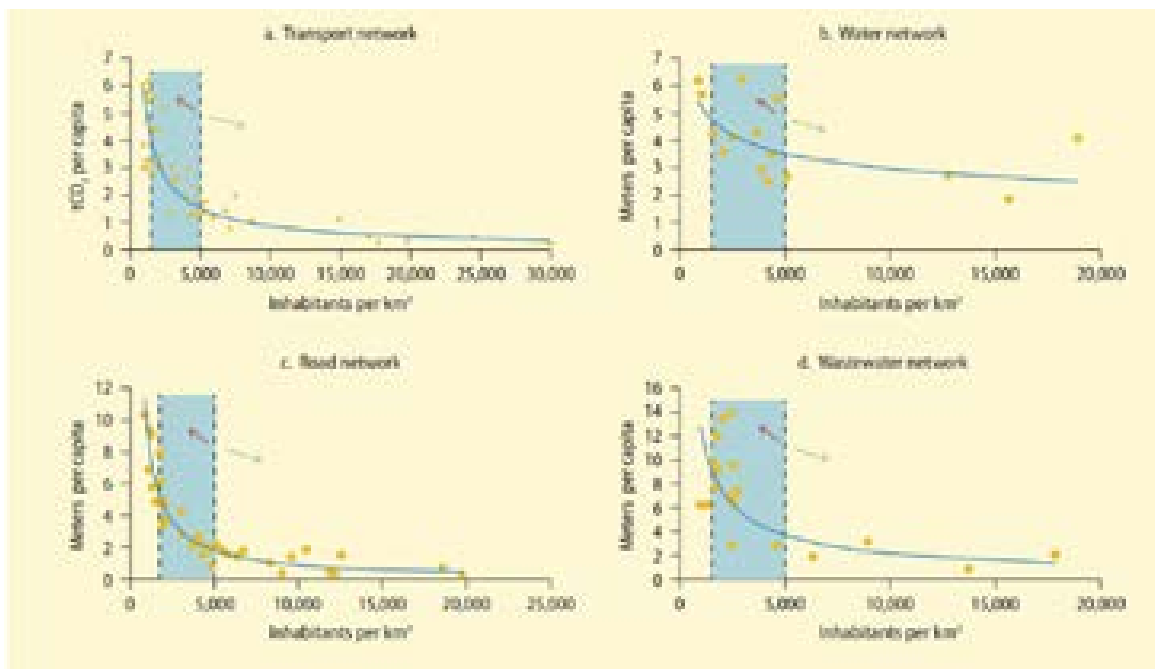


Figure P1-2: Impact of urban growth on carbon emissions, and length of water pipes, roads, and wastewater pipes needed for infrastructure (Source: World Bank)

CASE STUDY

London, England, UK

Population: 10,434,000 ²⁷

2030 Forecast: 11,467,000 ²⁸

Size: 1,572 km² ²⁹

LONDON GREENBELT AND THE DYNAMIC BALANCE OF DENSITY, COMPACTNESS AND AFFORDABILITY

The city of London has been attempting to manage growth since 1580, when Queen Elisabeth I issued a decree prohibiting construction within three miles of the city walls to curb the influx of immigrants, retain a competitive economy, and control price inflation.³⁰ These 400-year-old attempts have had successes and regressions; however, the city's land area growth has outpaced population growth, resulting in declining overall density up until the last two decades, as shown in Figure P1-3.

London's population reached its peak in the late 1930s, when inhabitable conditions were brought to the proclamation of the London Green Belt Act of 1938.³¹ The plan was presented to the public as a protection of green open spaces for recreation or agriculture, however the Green Belt does not indicate uses or environmental performance. It is mainly a physical boundary to the permissible expansion of urban development. The Green Belt boundary was integrated into plans by local councils and in subsequent planning frameworks in 1947, 1955, 1988, and the latest National Planning Policy Framework in 2021.³²

As one of the most expensive cities in the world, London's greatest challenge is to meet housing demands within city limits. As part of its New London Plan, drafted with wide public participation and approval in 2021, the city set the target of making 50 percent of new housing units affordable with a fast-track review incentive for developers.³³ The plan's 10-year target for housing amounts to 522,870 net housing completions. These constraints inform local councils of potential sites that enable dense development, mainly along transit corridors. The Green Belt has successfully kept a clear boundary between countryside and city.

The majority of the metropolitan Green Belt (94 percent) is outside London, spanning over 40 miles from the city. The small fraction of Green Belt that is within London's boundary accounts for 22 percent of all the land in the capital and serves as an ecological buffer zone or as recreation space for the city's residents.

Greater London Population (000's) and Area (km²) 1545-2018

from *Angel, Planet of Cities* and UK Secretary of State
for Ministry of Housing, Communities and Local Government

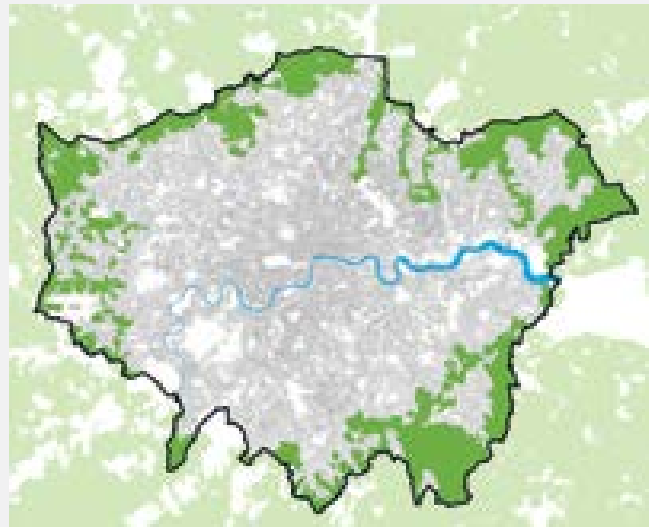
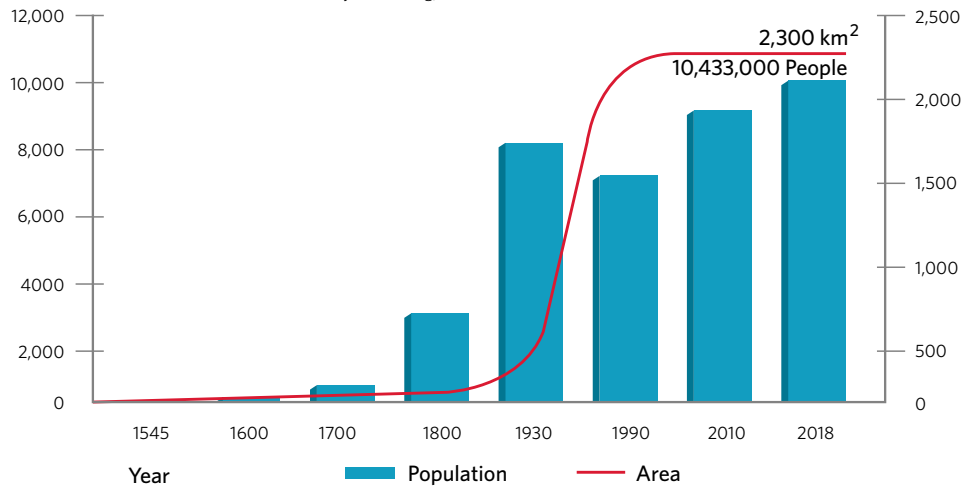


Figure P1-3: Greater London's land area growth is outpacing its population growth, indicating a more recent trend toward sprawl (Source: Planet of Cities).

Figure P1-4: (Left) Metropolitan green belts in the United Kingdom, London in red. (Source: Hellerick, https://commons.wikimedia.org/wiki/File:The_Metropolitan_Green_Belt_among_the_green_belts_of_England.svg#file)

Figure P1-5: (Above) London Green Belt inside and outside the greater London jurisdiction boundary. (Source: Quod)

CASE STUDY

Portland, Oregon, USA

The state of Oregon requires every city to have an urban growth boundary. In Portland, Oregon's largest city, authorities consider changes to their UGB every six years based on 20-year forecasts of population and employment and the ecological capacity of land within the existing UGB. Most expansions are small and under 20 acres. Figure P1-6 shows the boundary's evolution over time. The initial UGB is shown in the light peach color. Portland has accommodated expected population increases through policy and zoning changes within the existing area. The authorities look to increase the allowed floor area ratios (FAR) of buildings and

to increase public transport capacity. If the urban growth report indicates that the existing UGB provides sufficient capacity to accommodate the growth that is forecast over the next 20 years, no UGB expansion is needed. If, after these land efficiency measures are taken, a need remains for additional capacity, the UGB can be expanded. Newly urbanized land is chosen from among priority areas, defined by their alternate value as agricultural land or protected natural areas, based on an ecological assessment. It should be noted that the statewide UGB requirement helps to avoid competition among cities.

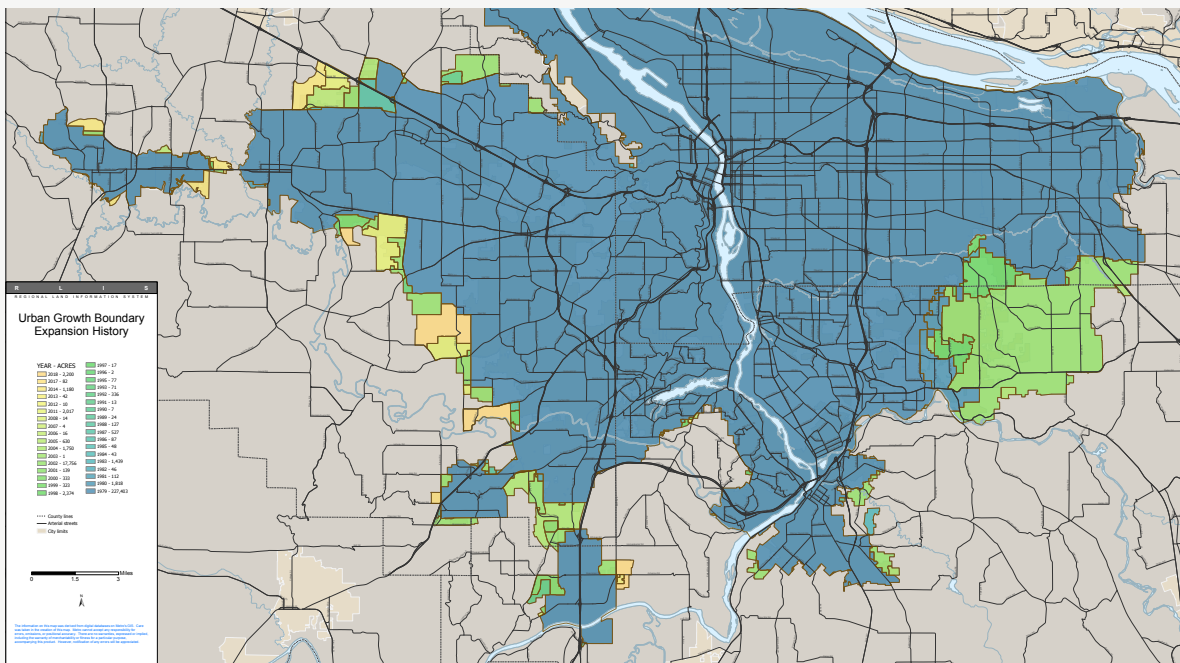


Figure P1-6: History of urban growth boundary in Portland. Numbers to the side show evolution of the UGB over time. Portland has controlled its rate of expansion by employing and regulating an UGB. (Source: Oregon Metro: oregonmetro.gov)

GOAL 1A:

Create a compact metropolitan form that facilitates preservation of ecologies, agrarian landscapes, and heritage sites and avoids climate hazard zones

Compact cities are efficient and livable in many ways. The density means that transit functions effectively, that neighborhoods can have close walking and biking destinations, and that the environmental footprint of the city is minimized. Many studies confirm that compact cities are less auto dependent, consume less land, require less infrastructure, and reduce energy and water demands. Studies in California show that even small increases in density lead to major saving in vehicle kilometers traveled (VKT), land consumption along with reductions in water, energy and infrastructure demands.¹⁰ In addition, it demonstrated improvements in population

health through better air quality and more pedestrian activity.

To achieve similar outcomes, growing cities should adopt a policy of creating, periodically updating, and enforcing UGB lines. To do this, rational growth rates must be adopted as the basis of the urban land requirements. In addition, infill sites must be identified along with new growth areas. These growth areas should be contiguous to existing development, free of environmental hazards or significant ecological resources, and located along rational circulation, transit, and infrastructure corridors.



Figure P1-7: The Metro 2040 Framework Plan for Portland concentrates new population growth in compact centers along transit corridors and emphasizes open space to define community boundaries and enhance quality of life. (Source: HDR | Calthorpe).

LEGEND: ● Primary Center ● Secondary Center ● Tertiary Center — Transit Line

ACTION 1.A1: Establish a rational growth target and economic development strategy

To create a functioning UGB, a realistic and rational population growth projection and economic development rate must be established. Within this, five-year near-term growth and infill areas should be designated.

Population increase in growing cities throughout the developing world and much of Asia has been on average very high over due to migration and natural growth. Migration is largely the result of people moving from rural villages to cities in search of better lives, increased services, and expanded economic opportunity. Natural growth is the result of population increase caused by a greater rate of births than deaths of the existing population. The quantity of land needed to accommodate growth is proportional to these two fundamental forces and drives the need for residential land and services land allocations. Along with basic residential needs, economic development areas, adequate infrastructure, diverse mobility options, parks, and social services must be planned. The overall density target of 10,000 population per square kilometer must include sufficient land areas for all these development needs and services, both commercial and residential.

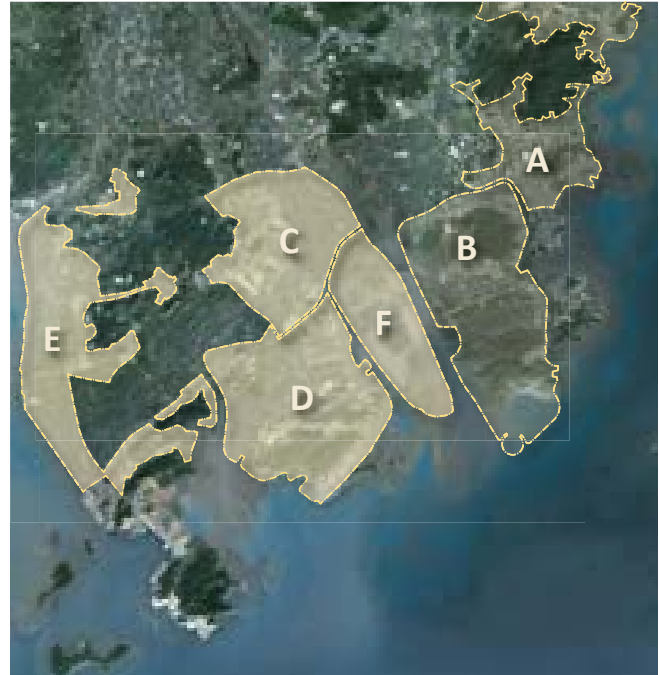


Figure P1-8: Districts in Zhuhai, China (above) and table of population projection for 2040 and 2060 by district (below)
(Source: HDR | Calthorpe)

DISTRICT	AREA (SQ KM)	POPULATION (2040)	POPULATION (2060)
A	122.90	1,345,000	1,463,000
B	90.00	585,000	860,000
C	94.07	920,000	1,080,000
D	110.78	971,000	1,040,000
E	114.41	599,000	860,000
F	67.70	485,000	1,040,000
Rural	13.50	105,000	105,000
Total	613.36	5,010,000	6,448,000

ACTION 1.A2: Establish an UGB enforcement mechanism and periodically update the UGB based on economic growth projections

In the developed West, differing forms of UGBs have been adopted by state or national policy. Expanding the practice and implementing higher density standards are the next steps. In the developing world, such complex levels of planning and governance are challenging.

Nonetheless, directing and planning for services in future growth areas is recognized as a critical step in bringing massive sprawl and scattered informal settlements under control. Fundamental governance, land use planning, and infrastructure financing in low-income cities and countries are needed.

For example, China adopted the Urban and Rural Planning Law in 2007 that established city master plan requirements, which are reviewed and approved by the central government. Typically, the City Urban Planning Institute prepares the plan with the support and review of the Planning Bureau. The plan is for a 20-year period with updates approximately every five years. In 2014, UGBs were introduced into the city master plan documents in 15 pilot cities to test the concept. If adopted generally in the city master plan, the UGB would enjoy strong enforcement and have a schedule for updates and modifications. This process serves as a good model for introducing UGBs to planning practices.



Figure P1-9: Portland, Oregon's urban growth boundary is along the Clackamas River. (Source: Google Earth)

GOAL 1B:

Prioritize redevelopment and infill development in areas safe from climate change hazards

Infill and redevelopment can play a significant role in satisfying growth needs and repairing the urban fabric. Locating appropriate sites should be the product of the long-term citywide development vision and goals with careful attention to avoiding climate change such as flood, sea-level rise, and fire-prone hazard areas. For example, if the city's economic strategy involves more service and white-collar jobs, infill in central locations, particularly close to transit improvements, may dominate. If the goal is additional R&D and light industrial jobs, the result may involve redevelopment of moribund, heavy industrial sites. All new

ACTION 1.B.3: Assess and designate redevelopment sites based on minimum density, decay, hazard designations and economic development needs

Mapping areas vulnerable to climate change impacts along with significant decay and low economic value is an essential step in identifying potential infill and redevelopment sites. Such areas, free of long-term environmental hazards, would become prime targets of economic redevelopment. Other factors include areas of low use or density and undeveloped parcels within a district with partially developed infrastructure. Create a database of potential sites and identify mechanisms to redevelop them in the early phases of city growth and urban boundary formulations.

residential districts must be located in hazard-free areas, especially in regions with significant climate change impacts. In the developing world, rehabilitation of existing informal settlements with adequate services should be the focus along with planning for affordable housing in job-accessible districts. In addition, older residential areas with buildings in an advanced state of decay may need replacement. Finally, new infrastructure, such as new transit lines or major public investments in ports, intercity train facilities or airports, may indicate where the best areas exist for redevelopment.

ACTION 1.B.4: Create incentives to prioritize infill and redevelopment in climate hazard-free zones

In many cases, safe infill and redevelopment areas may be more attractive to developers because of their central location and access to jobs and cultural assets. There are usually tax incentives for commercial development when the city is expanded to new districts, but rarely for infill development in an existing urban area. In fact, infill developments closer to regional assets are usually sold at the highest price in land auction, so affordable housing is at a disadvantage and will need subsidies as well as enhanced infrastructure. Inclusionary zoning allows an internal subsidy from market rate development to affordable units. In lower income cities, more significant levels of support will be required to provide basic land support and infrastructure. Higher density zoning and density bonuses for infill locations is another incentive that helps developers as well as reinforcing overall population density and land conservation.

GOAL 1C:

Preserve ecological, agricultural, historic, and cultural resources

A key component of any growth strategy and UGB is preservation of those cultural and historic elements that make a city unique along with protecting its natural resources. Too often expedience allows new development to spread out in ways that compromise ecological and agrarian assets. Within the city, historic buildings, districts, and cultural features have been neglected for too long and fallen prey to the bulldozer. The city's ecological health along with the strength of its society and culture depend on the preservation and support of these features. Moreover, the local economy's identity and character depend on these assets.



Figure P1-10: Natural resources that should be protected, such as rivers draining into the bay and mountain peaks, were mapped during the site analysis process of the citywide vision plan for Xiamen. (Source: HDR | Calthorpe)

LEGEND:

- Mountain Range
- ▲ Major Mountain Peak
- ▲ Minor Mountain Peak
- Water/Riparian Corridor

The city must identify and build a GIS database of these assets and respect them as essential opportunities and constraints in any plan because an UGB is shaped by these fundamental layers. Productive farmlands and food production areas are particularly complex. In some cases, it is rational that small farms close to the center of the city be converted to urban land along with their rural villages, but this should be done with great caution only after developing all other options. Given concerns about food security in China and other parts of the world, many governments have adopted aggressive farm preservation statues.

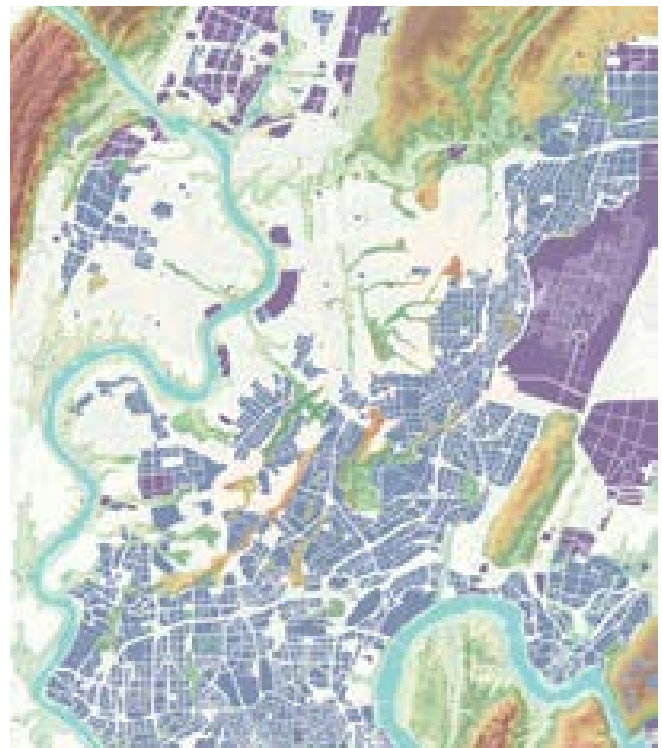


Figure P1-11: In Chongqing, China, development framework is focused with an objective of designation areas for growth that do not disrupt ecological systems in the region. (Source: HDR | Calthorpe)

LEGEND:

- Mountain | Forest
- Water | Riparian Corridor
- Key Protection Zone
- Flexible Development Zone

ACTION 1.C.5: Map historic, cultural, and ecological resources

Existing planning methods require mapping of various resources with definitive boundaries established. A good model has been adopted in China with a well-defined series of preservation lines. These consist of a green line for open space and designated ecological areas, a blue line for water bodies and wetlands, a purple line for historic preservation areas, a yellow line for city-wide municipal infrastructure, and a black line for electrical transmission lines and stations. These, along with a more holistic approach to ecological systems and wildlife corridors, should help shape the UGB along with the protected lands within it.

Additionally, the concept of green community separators is often used within an UGB to create open space and preserve waterways while reinforcing the identity of a regional sub center.

ACTION 1.C.6: Map productive agricultural lands and assess rural villages

Preserving and enhancing the productivity of farmlands is a high priority globally, which means national policy should encourage retaining existing farmlands whenever possible. For example, China’s Basic Farmland Protection Regulation of 1998 lays out preservation requirements for the following categories of arable land that have been identified as ‘basic farmland.’

- Arable lands within production bases of grain, cotton, and oil as determined upon approval of the relevant competent department of the State Council
- Arable lands with good water conservancy and water and soil conservation facilities, along with low- and medium-yield farmlands that are under the renovation plan and can be renovated
- Vegetable production bases
- Farmlands for agricultural scientific researches and teaching experiments

Any conversion of basic farmland, farms larger than 35 hectares, or open space larger than 70 hectares must be approved. These protections should be formalized in the UGB created by the city master plan for additional protection.

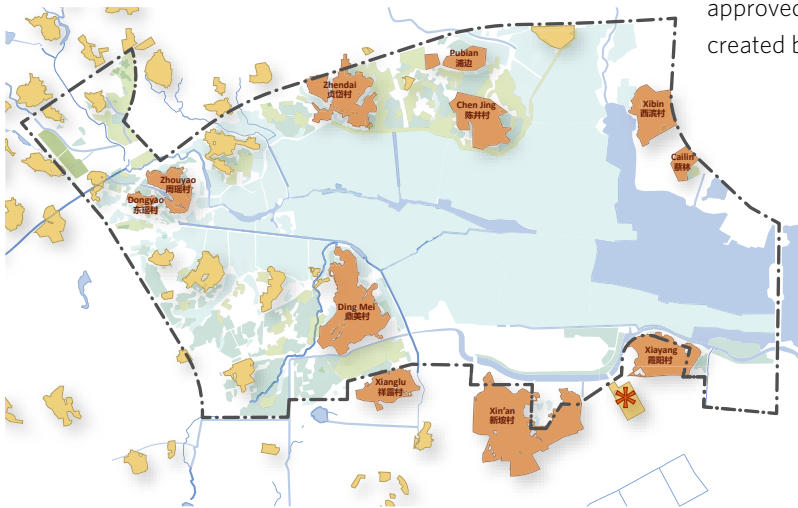


Figure P1-12: The site analysis for Maluan Bay New Town, Xiamen mapped existing villages, settlements, and agricultural lands with the goal to preserve them to the greatest extent possible. (Source: HDR | Calthorpe)

METRIC 1.1: **Urban Growth Boundary**

Establish a 20-year urban growth boundary that maintains adequate developable land for the projected future population and economic growth based on environmental assessments

The UGB is a fundamental measure of the overall density of the city. Once a city master plan with an UGB is established, the existing population plus the density of all new residential lands will render a total projected population for the 20-year plan. This will be divided by the total of 'developable urban land' inclusive of roads, utilities, open space within the UGB,

all public lands, and all forms of commercial and residential parcels. This number must be more than 10,000 population per square kilometer on average. The five-year incremental phasing must likewise maintain this minimum density through infill, redevelopment, and appropriate density on its new lands.



Figure P1-13: This agricultural border of Portland, Oregon's Urban Growth Boundary is the result of an environmental assessment (Source: <http://adcatlshoptalk.blogspot.com/2014/06/009-patrick-sweeney-urban-planning-and.html>)

METRIC 1.2: Redevelopment

Adopt a citywide redevelopment strategy for areas of blight and economic redevelopment opportunity

Each city should develop and publish a redevelopment and infill strategy as part of the city master plan process. Many factors will contribute to the designation. Planning and redeveloping failing areas for high-intensity development with a mix of uses is critical to maintaining a balanced and healthy regional economy and city identity. Cities that continually

grow outward with little reinvestment in older and historic districts often decay from within. Care must be taken to preserve and, in some cases, restore places that are unique and historic. Redevelopment should not destroy existing communities but should aim to preserve, enhance, and revitalize them.

METRIC 1.3: Resource Preservation

Adopt a preservation strategy for historic, cultural, and ecological assets

Beyond merely mapping these assets and incorporating them within the city master plan, they should be actively supported by needed public and private investments. Historic and cultural resources within the city must be cared for and active new uses should be identified. Important open space elements, particularly areas of prime ecological value, must

be preserved even when sensitive utilization is planned. For example, many key ecological and open space assets can be protected while being used for public recreation and deployed for water purification. This preservation metric implies both protection and developing a strategy for ongoing maintenance and balanced use.

METRIC 1.4: Agriculture and Villages

Rank and designate productive agricultural lands and rural villages appropriate for preservation

Not all farmlands and rural villages can be preserved, so a rational system of ranking must be developed. National policy through farmland preservation laws designates the standards and methods for preserving lands that are determined to be “basic farmlands.” Rural villages should be preserved and enhanced in areas of preserved farmlands. In areas that are

programmed for new development, villages can be preserved within the new areas with careful planning and integration. Only villages that have experienced high levels of decay and vacancy or are located in the path of essential infrastructure should be relocated.



- A. Majority of existing village preserved
- B. Surrounding street network links to important nodes in the village; auto-free green streets link village to surrounding neighborhoods
- C. Amenities provided in the form of neighborhood centers and schools
- D. Ponds and canals conserved and integrated into the open space network
- E. Village open space conserved that could be used for orchards, farming, etc. as well as neighborhood parks

Figure P1-14: The conservation strategy for the Ding Mei Village in the Maluan Bay New Town Plan in Xiamen includes: preservation of traditional and significant architecture; provision of civic amenities; upgrading of infrastructure; provision and addition of open space around village; and preservation of existing streams, ponds, orchards, etc. (Source: HDR | Calthorpe)

CASE STUDY

Dar es Salaam, Tanzania

Population: 5,781,577 ¹¹

2030 forecast: 10,760,000 ¹²

Size: 1,393 km² ¹³

PRESERVING FOOD SECURITY IN AN EMERGING MEGACITY

Tanzania's capital is among the fastest growing urban population centers in the world, on its way to becoming a mega-city of 10 million people before 2030. The city is the epicenter of a rapidly growing economy, averaging six percent GDP growth the year before the COVID-19 pandemic.¹⁴

In Dar es Salaam, over 60 percent of families are engaged in agricultural production, making urban agriculture one of the largest employers.¹⁵ As of 2018, women are the main force of the urban agriculture economy and are responsible for 60 percent of agricultural activities in Tanzania at large.¹⁶ Urban agriculture in Dar es Salaam supplies 90 percent of leaf vegetables and 70 percent of milk for the city. Seventy-four

percent of urban dwellers keep livestock.¹⁷ Urban farmers constituted 65 percent of the informal sector in Dar es Salaam and their average income ranges from 1.6 percent to double the industrial monthly minimum wage.¹⁸ Maintaining access to cultivating land is, therefore, significant to the well-being, livelihoods, and food security of millions of people in the city, mainly women and children.

Acknowledging the role of preserving agricultural resources in light of rapid growth, the city adopted an urban agriculture strategy in its 2012–2032 masterplan. The plan is based on a bottom-up process engaged by local and international organizations and academics, and encouraged by UN-

Habitat.¹⁹ The plan preserves land by zoning it for agricultural uses. The agricultural land designation is coupled with preservation of open and natural spaces in the city periphery to divert urban growth from the fringes onto designated transit-oriented areas.

This government-provided security establishes the foundation for production, distribution networks, and waste management facilities to empower closed-cycle local food networks. The city also engages in agricultural training and provides

equipment to city farmers. In a country with a very low rate of motorized transport use and low refrigerator ownership, local production and proximate distribution outlets are key to secure access to food for all.



Figure P1-15: Urban agriculture is one of the largest employers in Dar es Salaam, supplying 90 percent of leaf vegetables and 70 percent of milk for the city. (Source: Oleksandr Rupeta/Alamy)

CASE STUDY

Seattle, Washington, USA

Population: 730,400²⁰

2030 Forecast: 870,000²¹

Size: 217km²²²

URBAN GROWTH MANAGEMENT WITH INCENTIVIZED INFILL DEVELOPMENT

Seattle has maintained a compact growth pattern and kept sprawl out of rural land thanks to unique policies of preservation and development incentives. Seattle is one of the fastest growing urban centers in the United States, with a population growth of over 21 percent between 2010 and 2020.²³ Large manufacturing and technology employers formed a high-demand job market, which spurred intense housing demand.

The City of Seattle and King County set an urban growth area boundary in 1992 and formed a Transfer of Development rights (TDR) agreement with King County, its surrounding hinterland. The TDR program is a voluntary, incentive-based, and market-driven approach in which rural landowners realize

economic return through the sale of development rights to private developers, who can then build more compactly in designated urban areas. The program has protected 141,500 acres of rural/resource land, securing local food production, accessible forest areas and, in parallel, enhancing livability in the urban center.²⁴

On top of development rights, the TDR program was extended to also enable the city to receive a portion of the property tax revenue that accrues from new buildings to use on infrastructure improvements.²⁵ To direct urban development in desired areas, the city established various in-fill incentives. One good example is up-zoning the Capitol Hill neighborhood,

replacing single-family homes with a diversity of 'missing-middle' building types, from duplexes to eight-plexes, micro-units and stacked flats. This fine-grain densification increases efficiency of existing infrastructure while allowing integration of commercial and office uses in a formerly single-use area.

Separately, to keep some of the historic character of the city intact, Seattle also enacted a historic preservation plan, with property and income tax programs to assist private owners to keep cultural assets preserved and maintained.²⁶

King County — Seattle
2013 Transfer of Development Rights (TDR) Agreement

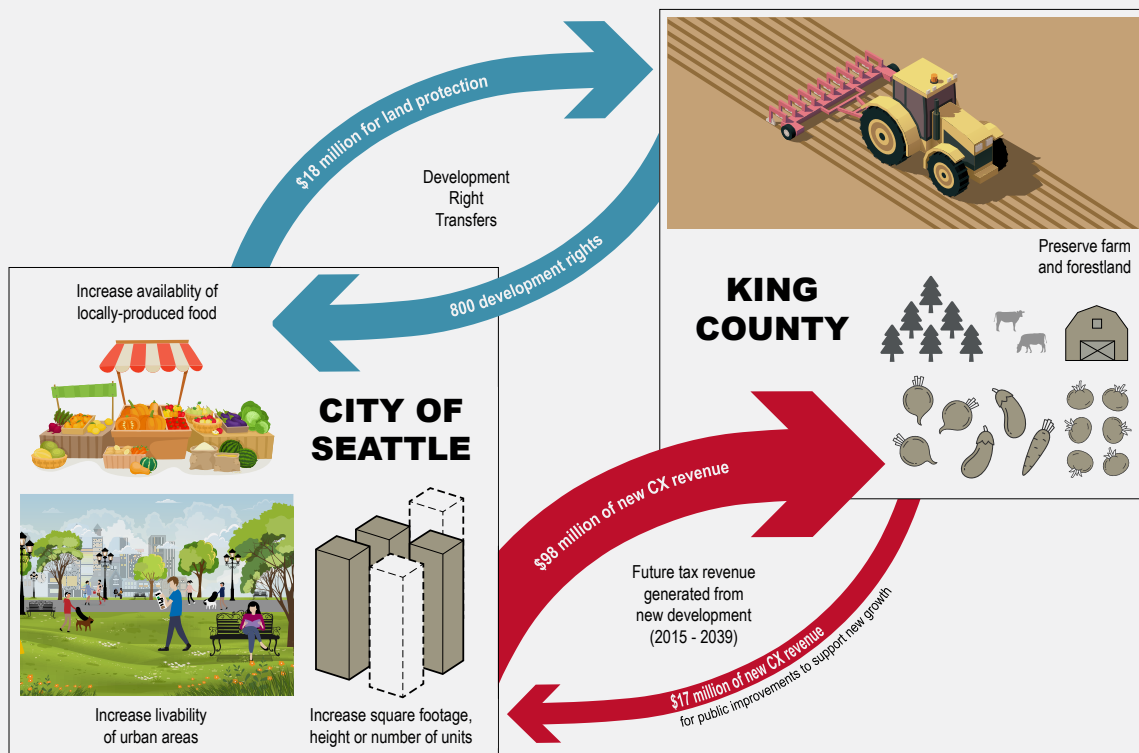


Figure P1-16: Diagram of TDR agreement and its impact (Data source: King County Department of Natural Resources and Parks)

ENDNOTES

- ¹ Chengri Ding, "Farmland Preservation in China," LILP (Lincoln Institute of Land Policy), accessed October 29, 2021, <https://www.lincolninst.edu/publications/articles/farmland-preservation-china>.
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