

ENDING GLOBAL SPRAWL

URBAN STANDARDS FOR SUSTAINABLE AND RESILIENT DEVELOPMENT

The health and wellbeing of humankind will depend on the kind of cities we build in the next two generations. They will provide the scaffolding for our social, economic, and environmental future. The way we shape cities will impact humanity's most pressing challenges: climate change and habitat stability; social opportunity and community strength; economic growth and poverty.

We now have 4.2 billion people living in cities and that number will increase to 6.7 billion by 2050. Based on our current pattern of global sprawl, this will translate into an 80 percent expansion of city footprints from 2018 to 2030. The current form of global sprawl deepens spatial inequalities and isolates the poor from the opportunities of urban life; it heightens the costs of infrastructure and social services and it intensifies the environmental burdens of poor air quality, carbon emissions, and deteriorating ecosystems.

Urban planning and the future of the city is a whole systems design challenge that can only be addressed with comprehensive, long-term thinking. This book rests on the thesis that while each city is unique, the global challenges resulting from urban sprawl in all its varied forms are universal. Three types of sprawl afflict growth throughout the planet: the low-density sprawl of higher income regions that have become auto dominated; the low-income sprawl of the Global South that isolates the poor from economic, social, and cultural opportunities; and the high-density sprawl of superblocks, towers, and isolated uses that has emerged in China and other Asian countries. While each is very different, they share common urban pathologies: isolated poverty; water, air, and land pollution; congestion; loss of community; degraded health; and economic headwinds to name a few.

Overshadowing these profound challenges are the accelerating effects of climate change. So urban forms must not only reduce per capita greenhouse gas emissions, they must grow in ways that are resilient and adaptable in the face of new climate-related challenges. They must enhance the lifestyles and technologies of mitigation at the same time they shape communities that can withstand the onslaught of extreme weather events. Whether threatened by expanding fire zones, peak heat events, extreme storm deluge, or sea level rise, appropriate urban form, open space systems, and development location can make cities more resilient and sustainable.

A comprehensive approach to these challenges involves the seven fundamental urban design principles presented in this book. To thrive, cities need to plan for resilient new growth while they conserve natural and agrarian resources, preserve history, and nurture complete communities. They need to create walkable and transit-oriented districts that offer alternatives to the car. They need mixed-use neighborhoods that create places for a broad range of incomes, ages, and household types. They need to create compact communities that balance jobs and housing, opportunity and access, services, and public space. These principles are distilled from successful strategies for healthy urban forms around the world and positive outcomes have been documented for each principle in widely differing conditions. But more than just describing better urban form, these seven principles set measurable standards, illustrate best practices, and report on analytically validated outcomes.

Principle 1: Plan for Growth, Resilience, and Preservation

Principle 2: Reserve Open Lands and Public Space

Principle 3: Enhance Shared Mobility and Transit

Principle 4: Build Transit-Oriented Developments (TODs)

Principle 5: Mix Uses and Users

Principle 6: Create Human-Scale Streets and Small Blocks

Principle 7: Design for Walking and Biking

All cities can share the co-benefits that result from these principles. As urban form and regional structure improves, all the metrics studied improve—air quality, miles driven, fiscal impacts, household cost, infrastructure costs, land consumption, carbon emissions, water consumption, and health costs. It is the convergence of positive outcomes that increase the political and economic basis for significant change. The strategies presented here reduce per capita environmental demands while making services, infrastructure, and economic development more efficient, more cost-effective, more accessible, and more interconnected. In the end these seven principles seek to connect people, place, history, and ecology in ways that are derived from humankind's greatest urban traditions and set direction for a more sustainable and resilient future.



Two forms of contemporary sprawl side by side: a low-income favela and wealthy high-rise condo in Sao Paulo Brazil. (Photo: Luiz Arthur Leirão Vieira).

Ending Global Sprawl: Urban Standards for Sustainable and Resilient Development

PRINCIPLE

GOALS + ACTIONS

Principle 1

Plan for Growth, Resilience, and Preservation

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

1A: Create a compact metropolitan form that facilitates preservation of ecologies, agrarian landscapes, 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 enforcement mechanism and periodically update the urban growth boundary 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, historical, and cultural resources

- **ACTION 5:** Map historic, cultural, and ecological resources
- **ACTION 6:** Map productive agricultural lands and assess rural villages

Principle 2

Reserve Open Lands and Public Space

Preserve and create parks and open space for community use, green connections, ecological systems, and adequate storm mitigation areas

2A: Provide a variety of public open spaces and parks within an easy walking distance

- **ACTION 1:** Reserve adequate space for local, district, and regional parks in new development areas
- **ACTION 2:** Develop parks with a range of uses, from active recreation to passive leisure for a full range of ages
- **ACTION 3:** Preserve major natural features within the UGB connected with trails and bikeways
- **ACTION 4:** Integrate natural and cultural attractions

2B: Provide human-scaled plazas, civic centers, and community services

- **ACTION 5:** Make accessible to people with disabilities and the elderly
- **ACTION 6:** Size hardscape sections of parks and plazas to the level of reasonable use

2C: Preserve and enhance climate resilience with adequate storm management areas and fire zone buffers.

- **ACTION 7:** Map growth and infill areas safe from sea level rise, storm surge, and fire hazards
- **ACTION 8:** Enhance natural mitigation systems such as drainage ways, wetlands, and forestlands
- **ACTION 9:** In urban areas, increase detention and infiltration at the building, street, and district level
- **ACTION 10:** Mitigate urban heat island effects with green canopies and reflective surfaces

Principle 3

Enhance Shared Mobility and Transit

Make networks of transit, new forms of shared mobility, and active transport more desirable, affordable, and ubiquitous

3A: Ensure frequent and direct transit service with an interconnected hierarchy of transit technologies

- **ACTION 1:** Integrate Metro, bus rapid transit, light rail, streetcar, and bus service with micro mobility options
- **ACTION 2:** Build a cross-service, smart transit access system
- **ACTION 3:** Coordinate transit so it is easy to switch modes or lines; limit transfer distance to 100 meters

3B: Locate transit stations within a walking distance of homes, jobs, and services

- **ACTION 4:** Locate transit lines and expansions to service all new and redevelopment areas
- **ACTION 5:** Plan a grid of dedicated transit lanes that can be used for BRT, light rail, streetcar, or autonomous shared vehicles
- **ACTION 6:** Emphasize the bike connection to major transit stations

Principle 4

Build Transit-Oriented Developments (TODs)

Match land-use density and mix to transit capacity in a walkable environment

4A: Create higher density mixed-use nodes around transit

- **ACTION 1:** Increase walkability, mix, and a sense of place with civic uses, parks, and plazas at stations and along transit corridors
- **ACTION 2:** Match density to transit capacity using a hierarchy of TOD types through both redevelopment and new construction
- **ACTION 3:** Concentrate major commercial and retail development in high-capacity TOD areas

4B: Design transit stations with convenient walking and bike routes to homes, jobs, and services

- **ACTION 4:** Ensure convenient and safe entrances to transit stations free of major auto traffic
- **ACTION 5:** Emphasize bike and pedestrian access to stations by integrating bike parking and shops

Principle 5

Mix Uses and Users

Create diverse, mixed-use neighborhoods and districts that integrate affordable housing

5A: Encourage an optimal balance of housing, shops, and services

- **ACTION 1:** Create a great walking experience with ground floor shops and services
- **ACTION 2:** Provide opportunities for residential development in commercial blocks
- **ACTION 3:** Within each residential neighborhood, cluster schools, social services, and civic uses

5B: Create a jobs/housing balance within a short transit commute distance

- **ACTION 4:** Develop a citywide pattern of mixed-use districts that balance jobs and housing

5C: Integrate affordable and senior housing in each neighborhood

- **ACTION 5:** Establish districtwide affordable housing strategies and financing mechanisms

Principle 6

Create Human-Scale Streets and Small Blocks

Increase density of road networks with small blocks and human-scaled streets

6A: Create human-scale blocks and streets

- **ACTION 1:** Develop blocks with perimeter buildings to provide shared interior courtyards and active sidewalks
- **ACTION 2:** Reshape existing superblocks and cul-de-sac subdivisions with pedestrian passages

6B: Disperse traffic over narrow, parallel routes with a grid of varied street types

- **ACTION 3:** Locate larger expressways and highways at the district edge
- **ACTION 4:** Limit major through street widths by substituting with one-way street couplets

6C: Establish car-free corridors that accommodate dedicated and connected biking and walking paths, which may include transit lanes

- **ACTION 5:** Auto-free streets should provide shopping and services at the building ground level
- **ACTION 6:** Connect auto-free streets to trails and paths within major open spaces

Principle 7

Design for Walking and Biking

Prioritize walking and biking with ubiquitous safe, direct, and comfortable routes

7A: Emphasize pedestrian safety, comfort, and convenience

- **ACTION 1:** Plan sidewalk dimensions in proportion to surrounding density and uses
- **ACTION 2:** Plan for consistent street trees and pedestrian amenities
- **ACTION 3:** Create 'bulb outs' at street corners, replacing parking lanes to reduce crossing distance

7B: Encourage ground-level activity and create places to relax

- **ACTION 4:** Line streets with visually active frontage and eliminate parking in front setbacks
- **ACTION 5:** When block security is required, provide semi-transparent fencing design with setbacks for landscaping

7C: Design streets that emphasize bike safety and convenience

- **ACTION 6:** Protect bike lanes with physical barriers from cars and clear pedestrian separation
- **ACTION 7:** Consider the use of auto-free streets

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