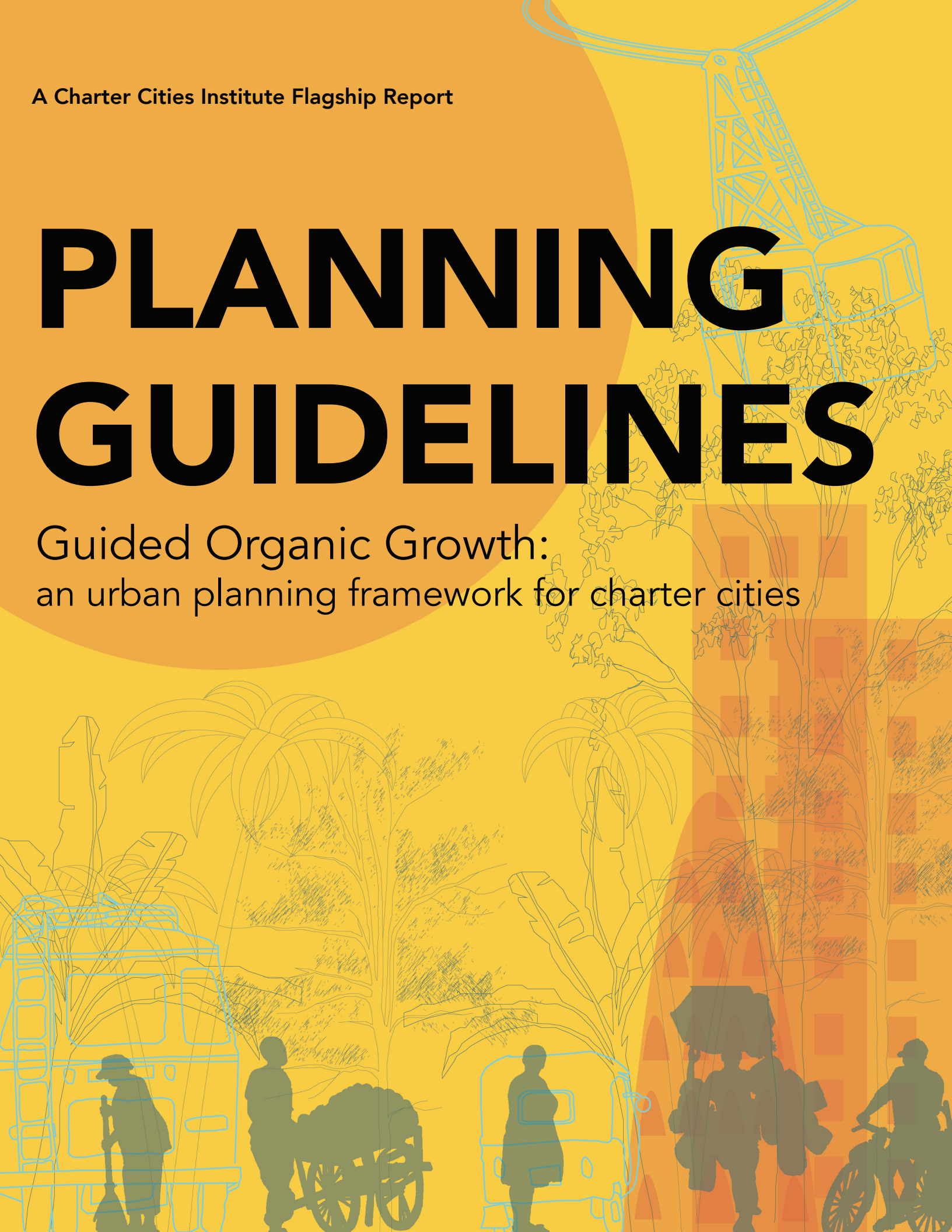
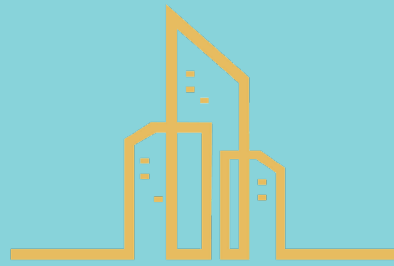


A Charter Cities Institute Flagship Report

PLANNING GUIDELINES

Guided Organic Growth:
an urban planning framework for charter cities





CHARTER CITIES — INSTITUTE —

The Future of Development

Empowering new cities with better governance to lift tens of millions of people out of poverty.

The Charter Cities Institute is a non-profit organization dedicated to building the ecosystem for charter cities by:

- Creating legal, regulatory, and planning frameworks;
- Advising and convening key stakeholders including governments, new city developers, and multilateral institutions;
- Influencing the global agenda through research, engagement, and partnerships.

Acknowledgements

The Planning Guidelines were prepared by the Charter Cities Institute's urban researcher, Heba Elhanafy, with direction, comments, and suggestions from Kurtis Lockhart and Jeffrey Mason along the way.

The illustrations in the document were developed by CCI former intern Luica Moretti with direction from Heba Elhanafy.

The team is grateful to Patrick Lamson-Hall, Nels Nelson, and Kobi Ruthenberg for their input, thorough feedback, and comments.

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INTRODUCTION



The Global South is urbanizing at an extraordinary pace. The UN projects that the world urban population will rise by over two billion people by 2050, with most of that increase concentrated in Africa and Asia (United Nations 2019). The scale of the challenge facing urban governments in providing even the most basic services is evident in countries like India and Nigeria, which are expected to see 416 million and 189 million new urban residents over the next 30 years, respectively. Although there has been much progress in recent decades in upgrading and connecting slum settlements with much-needed basic services, millions of urban dwellers still reside in slums, and lack access to basic municipal services and economic opportunities. Over 3 billion people worldwide are expected to be living in slums by 2030 (United Nations 2019).

Beyond the challenges facing governments, residents of Global South cities will face significant economic obstacles of their own. In high-income countries, urbanization has historically accompanied industrialization and rising incomes (Gollin et al. 2016). Industrialization enhanced employment opportunities and raised living standards in regions like Europe and North America, from the emergence of the Industrial Revolution to well into the 20th century. However, this link between urbanization and industrialization is breaking down in many rapidly urbanizing regions, which may leave millions of new urban residents in poverty.

Insecure property rights limit capital formation in slums, a necessary precursor to sustained economic development. Resources dedicated to health and education in slum communities are minimal, limiting the human capital formation residents could use to access better economic opportunities (Williamson 2013). The list of challenges facing cities in the Global South, and especially the hundreds of millions of current and future slum residents, is daunting and will require a litany of complex reforms and investment (Marx et al. 2013). Although not a cure-all for urbanization challenges in the Global South, charter cities can play a crucial role in supporting capacity building, transferring technical knowledge, and facilitating investment to alleviate poverty.

Charter cities are new cities with a special jurisdiction that allows for rapid improvements in governance (Lutter et al. 2020). Much of the Charter Cities Institute's work is focused on governance. We seek to improve administrative capacity and implement institutional reforms across cities and countries, fostering a more effective legal and regulatory environment. However, we also believe it is vital to carefully evaluate the built environment for a charter city.

The Charter Cities Institute's approach to urban development—to the built environment—consists of three key elements. First, we view cities through the lens of **labor markets**, as outlined by urban planner Alain Bertaud (Bertaud 2018). A larger, unfragmented labor market that seamlessly brings together a greater volume of talent and capital will be more innovative and productive than a city with a smaller or more fragmented labor market. By bringing together more people in a single labor market and providing greater access to varied

economic opportunities within a reasonable commuting distance from an individual's home, residents will be made more productive and enjoy increased income over time. The second element of our approach to urban planning is that charter cities must be **financially accessible**. Charter cities are a vehicle for poverty alleviation and jumpstarting long-run economic growth. Therefore, the poor must be able to afford to live in a charter city. Replicating even a fraction of the Chinese economic miracle that saw 850 million people lifted out of extreme poverty in 40 years through a strategy of urbanization, liberalization, and devolution of political decision-making will not be possible if new cities are only accessible to middle- and high-income earners (World Bank 2020). Barriers to developing the built environment of a charter city at low cost will inhibit the city's ability to serve the very population it is intended to aid.

The third element of our approach to urban planning is to recognize that cities are inherently an **emergent phenomenon**. Charter cities must strike a delicate balance between underplanning, which can lead to disorder and inefficiency, and overplanning, which can stifle economic dynamism and development. Some degree of planning is necessary to allow for the efficient delivery of services and for the functioning of markets. Cities need to be seen by planners as evolving and organic entities, and urban planners should seek to enhance and encourage interactions between residents, businesses, and other participants in the city.

The effects of both underplanning and overplanning have been placed on full display in existing and new cities developed throughout the Global South. In rapidly growing megacities, many local governments lack the financial or technical capacity (or both) to engage in urban planning that enhances service provision. Some cities have outgrown their fixed boundaries and as a result, planning on a metropolitan scale becomes increasingly fragmented, uncoordinated, and inefficient. In Nairobi, Lagos, Karachi, and elsewhere city governments only have authority over a fraction of the total area of the city, while the remaining areas of the city are split among different governing units (Wani et al. 2020). Or in Cairo, 18 separate government entities bear responsibility for transportation planning. In most emerging megacities, land rights are too uncertain, planning and fiscal tools are too inadequate, and population growth is too fast for governments to implement comprehensive planning (Haas 2018). In these unplanned environments, the economy and the housing stock become largely informal, limiting growth (Auerbach 2020).

At the other end of the spectrum are new cities—projects master-planned, built, and populated often “from scratch” (i.e., from a quasi-greenfield state), usually by a central coordinating entity. Many of these new cities are overplanned and inaccessible to the majority of the population. Brasília, developed in 1960 as the new Brazilian capital, is a classic example of an overplanned city that ignores the emergent nature of cities and the role that markets play in their development (Lutter et al. 2020). Designed to look like an airplane or bird when viewed from above with the

government offices and central business district located near the “cockpit,” Brasília, by design, confines most of its low-income residents far away from jobs and public services. The same can be said of Naypyidaw, another overplanned new capital city in Myanmar.

More recent new city developments often target a relatively small number of high-income earners or an emerging middle-class rather than the bottom of the pyramid. In Lagos, for example, Eko Atlantic is a luxury development planned for 250,000 residents where the typical housing unit is well beyond the means of the average city resident (Wallace et. al 2019). Lagos is home to over 14 million people (Macrotrends 2021), the majority of whom live in one of the city’s many informal settlements. There is a clear opportunity for new urban developments near cities like Lagos to capitalize on the opportunity to reduce poverty and informality by targeting not just high- and middle-income earners, but low-income residents as well (Lawanson 2020).

For a charter city to be successful, its urban development must strike an appropriate balance between formal urban planning and emergent market and community forces. Planning is ultimately a dynamic process that must evolve as the needs of the city evolve. These guidelines will provide an overview of how charter city planners can effectively operationalize the principles described above and, by doing so, create a charter city that generates sustained and inclusive economic growth.

Planning Guidelines

These guidelines outline an approach to urban planning intended to support a charter city’s long-term urban and economic development. This reference document is not a model urban plan, but a set of guidelines that urban planners can use when planning a charter city. It outlines how developers and planners should think about transportation, urban planning, and overall design for emerging charter cities.

This document contains three parts:

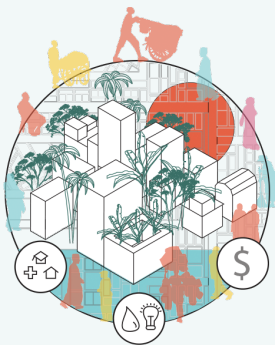
1. **City Development Guidelines:** These guidelines discuss the set of values about a charter city’s built environment that CCI sees as vital for long-run success.
2. **Urban Planning Guidelines:** This section develops a set of spatial guidelines to be utilized by planners when drafting and implementing a charter city’s urban plan.
3. **Mobility Guidelines:** These guidelines focus on transportation planning, intended to maximize mobility for residents within a charter city.

Part One:

CITY DEVELOPMENT GUIDELINES

The City Development Guidelines cover the values and high-level topics that will shape urban development within future charter cities. This section shapes and informs the implementation of specific policies discussed in the Planning and Mobility sections, presented later in this document.

A. The Charter City Values



Affordable and Accessible. A charter city's target population should include all income segments, including low-income families and individuals in search of better economic opportunities. Affordable housing, transportation, and public services are crucial to ensure access for residents of all income levels and social classes.

Inclusive and Growth-Oriented. A charter city is a vehicle for poverty alleviation. As such, planning decisions and policies should aim to support inclusive economic growth. This includes the effective provision of infrastructure and urban planning that is supportive of new development.

Sustainable. The city's development must strike a balance between economic, social, and environmental considerations. For economic sustainability, the city must focus on productive economic activity that generates positive externalities and external linkages. The city must also be financially solvent and self-sustainable over the long term. Where there are trade-offs between economic activity and environmental or social sustainability, urban planning and policy decisions should be subject to cost-benefit analysis.

B. The Paradigm

Planning is a discipline of shifting paradigms, transitioning over time from the “functional modern city” to the “rational-comprehensive approach” to “community and place-based planning” (see Annex 1 for a more detailed discussion of these planning paradigms). Ideas of functionality, order, and health shaped the modernist planning approaches; technological advancements and scientific thinking shaped the comprehensive approach; and emergent research on the importance of community and participation in planning processes have shaped more recent place-based planning approaches.

Most new cities are overplanned, often following either the Chinese-grid planning paradigm (Box 1), an American-suburban model (Box 2), or the International model (see Annex 1). These approaches leave little to no space for either emergent, market forces or for residents to communicate their needs and in turn help shape their cities (Haas 2019). New cities aimed at relieving the challenges of existing metropolitan areas across the Global South will eventually face similar challenges themselves without a deliberate shift in the current planning paradigm.

Charter cities are a revolution in new-city-making. They represent a new approach not just to urban governance, but also to physical urban planning. These guidelines propose a shift in the urban planning approach applied by new city developers towards a new paradigm of **“Guided Organic Growth.”**

BOX 1: Kilamba, Angola.

A new city in Angola built by Chinese developers for 200,000 people that follows Chinese grid-style planning, as well as typical public housing-style planning with huge blocks. Opened in 2012, Kilamba New City was so comprehensively planned that the Angolan government even provided furniture for the housing units, they also provided infrastructure and private land uses (Louise 2012). However, the city has largely failed to reach its population targets, in part because the extreme degree of overplanning drove up prices to the point that the city was a virtual ghost town upon opening.



Image 1: Kalimba's residential area
(Badkar, 2012)



Image 2: Kalimba's masterplan
(Construction.citic, 2008-2021)

BOX 2: Sheik Zayed, Egypt.

Sheik Zayed is a new suburb in Egypt built in the early 1990s and is home to over 200,000 inhabitants. Sheik Zayed is designed for middle- and upper-middle class Cairenes to escape the crowdedness of Cairo while also living in close proximity to their places of work. Most of the neighborhoods inside Sheik Zayed have adopted plans broadly in alignment with the American suburb model, including cul-de-sacs and the separation of functions. Sheik Zayed's design has resulted in many of the same problems that afflict American suburbs: separated functions, lack of public life, and low densities (Naseldin et al. 2017).



Image 3: Sheik Zayed's residential area (Abdelsalam, 2015)

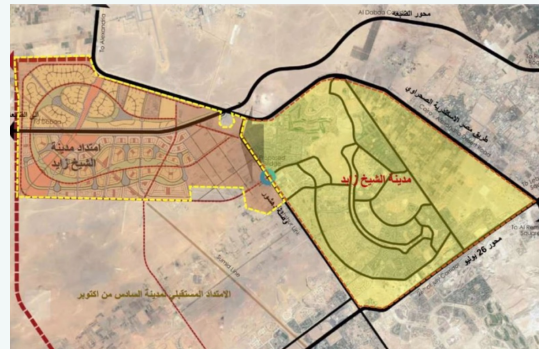


Image 4: Sheik Zayed's plan (Skyscrapercity.com, 2020)



Image 5: Konza's view (Constructionreviewonline.com, 2016)



Image 6: Konza's masterplan (ShoP Architects, 2021)

BOX 3: Konza Techno City, Kenya.

A proposed city outside of Nairobi, sometimes referred to as the new Kenyan Silicon Valley, is planned for 30,000 people with an initial cost for the first phase estimated at around \$3 billion USD. The Kenyan government is not willing to share in the infrastructure cost and is looking for a single developer for the city. The high upfront costs of the city as currently planned has left the Konza development at a standstill for several years (Watson, 2013).

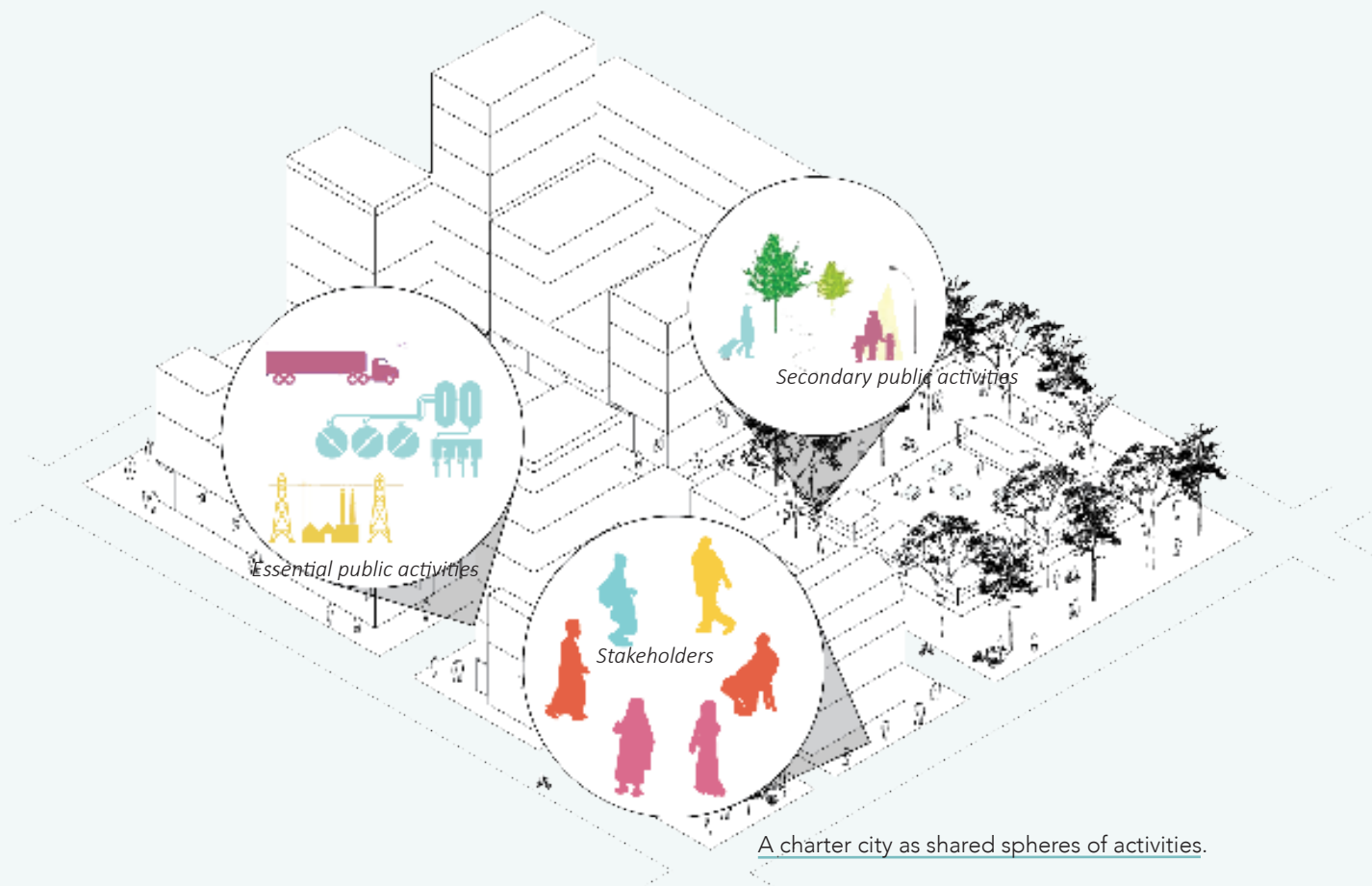
Guided Organic Growth:

**A Shift in New
City Making
Paradigms**

1. New city making as shared spheres of activities between the urban developer, the host country governments (national, regional, and/or local), and the community.

Building a city from the ground up should be a cooperative process between the city's main three stakeholders: the urban developer, the host country governments, and the community. Categorizing the activities needed to build a city to essential, non-essential, public, and private, can help facilitate the cooperative process of city making.

For example, when it comes to public goods, we can categorize the activities to essential and less essential development. Developments that require technical planning capabilities and financial resources like critical infrastructure (roads, electricity, and water) can be considered essential developments that the charter city developer should develop in cooperation with the national government to ensure infrastructure is developed in alliance with the host country infrastructure.

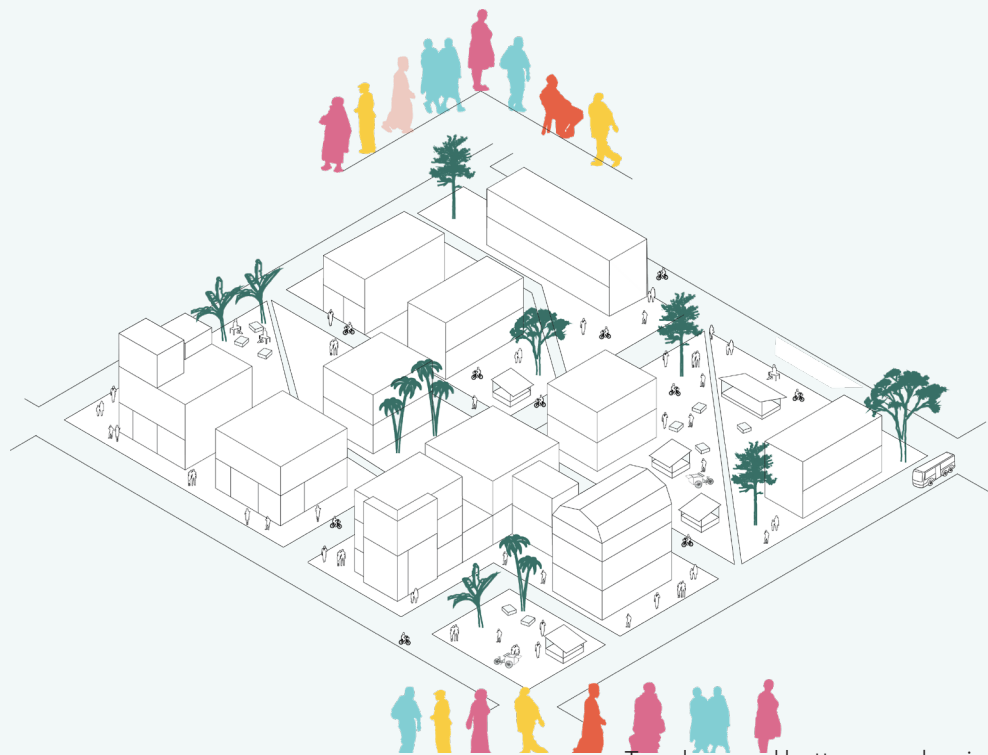


2. New city making as a combination of top-down and bottom-up processes.

Most new city developments follow a comprehensive planning approach where all key decisions are made exclusively by the city developer. The community is too often seen as a mere consumer and is excluded from most planning decisions. In a charter city, comprehensive approaches should be coupled with bottom-up planning and participatory decision-making approaches to ensure plans are not misaligned with underlying community practices, norms, and needs.

This top-down/bottom-up process is best implemented in the development of public spaces. Sites for public spaces should be demarcated in the initial city plans (top-down), and, once delineated, these sites should be developed on a collaborative basis with the local community most proximate to the particular public space in question (bottom-up).

As suggested by Nelson and Sternin (2020), “barefoot planning” systems where community-level planning practitioners have the authority to make local decisions about public right-of-way, land tenure, and utility provision can be an effective tool to foster communication between the city administration and emergent urban communities.



Top-down and bottom-up planning approach.

3. *New city making as a short- and long-term process.*

New city developments tend to be overplanned from the outset of the project. A case in point is Kilamba, discussed above, which was fully built out before it was opened to residents.

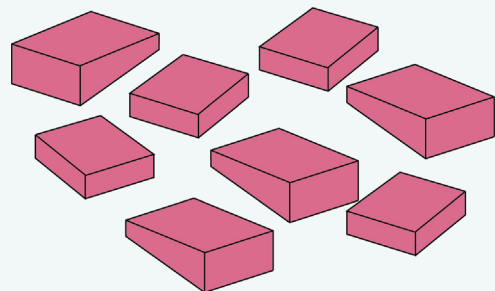
Charter city developers should recognize that while some elements of the city should be planned ex ante, building out the entire city ahead of attracting residents and business is both unnecessary and counter productive to creating a thriving urban environment compared to a phased approach. For example, to attract low-income residents to the city early in its development, lower density, self-built, and temporary housing should be permitted so that affordability remains high. Over time, greater variety in style and density of housing will emerge to meet demand as the city grows.



Cities making as a process.

c. The Implementation

The planning process of any urban development project involves three main phases: **analysis**, **concept**, and **project implementation**. The analysis and concept phases require market and site analyses, which are discussed in detail in Annex 2. This section covers the project implementation phase. The implementation phase in a charter city consists of two main parts: (i) demarcation of private and public functions, and (ii) phased infrastructure provision. Both of these parts should be informed by the values outlined at the beginning of Part One.

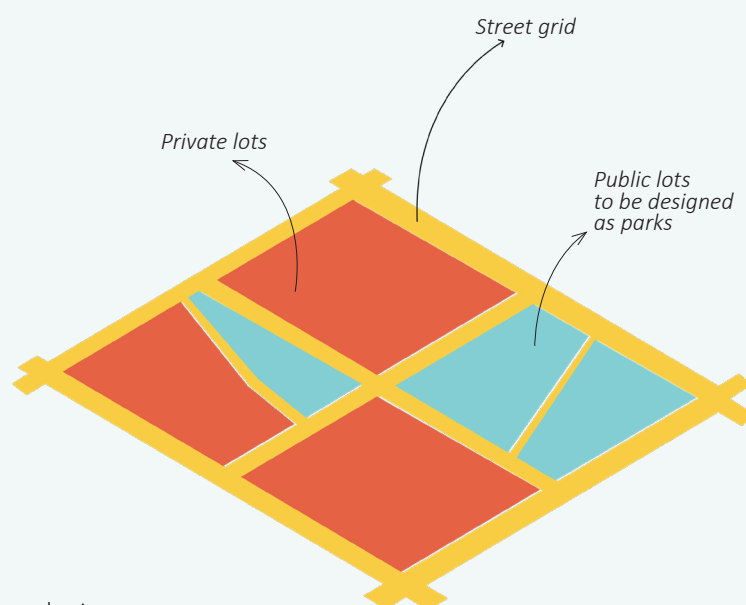


1. *Demarcation of private and public functions.*

Demarcating public and private attracts investments, and saves on initial upfront capital. This demarcation facilitates phased development because as the city's population grows—in turn growing both the city's financial resources and its infrastructure needs—public spaces that have been strategically demarcated can then be transitioned into sites for building new needed infrastructure. Additionally, such a demarcation will boost investment as investor uncertainty is mitigated when a city clearly publishes its future development plans.

It is collaborative and cost-effective to give freedom for community and economic forces to develop private land uses in a new city, while the city administration provides the needed public services and urban infrastructure on a timely basis and as demand arises in response to community and market forces.

This approach recognizes that cities are co-created by the developer, the community, and the market, and seeks to support that process rather than preempt it. See, for example, Box 5 on the Commissioners' Plan of 1811, which established New York City's street grid in advance of development. Early in the construction of a charter city, the developer should bear the primary responsibility for establishing public functions and spaces. As the population grows and the city begins to form a proper constituency, there will be a greater role to play for residents in successive planning decisions of the city.



Demarcation of public and private.

BOX 4: Elgouna, Egypt.

Elgouna is a town on the Red Sea in Egypt. It was developed as a city for wealthy Egyptians and European tourists as a resort-like escape from city life. Orascom Development, a major real-estate developer in Egypt, is the city's sole developer, responsible for every building, street, and more. The company acts as the developer, the contractor, and the real estate agent for the town. By exercising tight command over the growth of the project, Elgouna's land will not find its most valued use and the town will not adapt in response to community needs.



Image 7: Elgouna's view
(Steemit.com 2016)



Image 8: Elgouna's plan
(Elgouna.com 2021)

BOX 5: The Commissioners' Plan of 1811.

The Commissioners' Plan of 1811 was the land use plan that demarcated the street grid that has come to define Manhattan. Except for a handful of changes, most famously Central Park, Manhattan is still operating off of the same grid. To better guide New York's expansion beyond Lower Manhattan, the street grid was laid out in advance of development so that future land sales would be predictable, creating a more stable and less uncertain environment for investment. The plan was criticized for being repetitive and rigid, yet it proved quite useful in shaping New York's future by facilitating a real estate market. The plan did not include any detailed zoning or land use restrictions, allowing different types of uses to develop organically. Despite some enduring criticisms of the Manhattan grid, it remains an important component of New York's remarkable economic success.

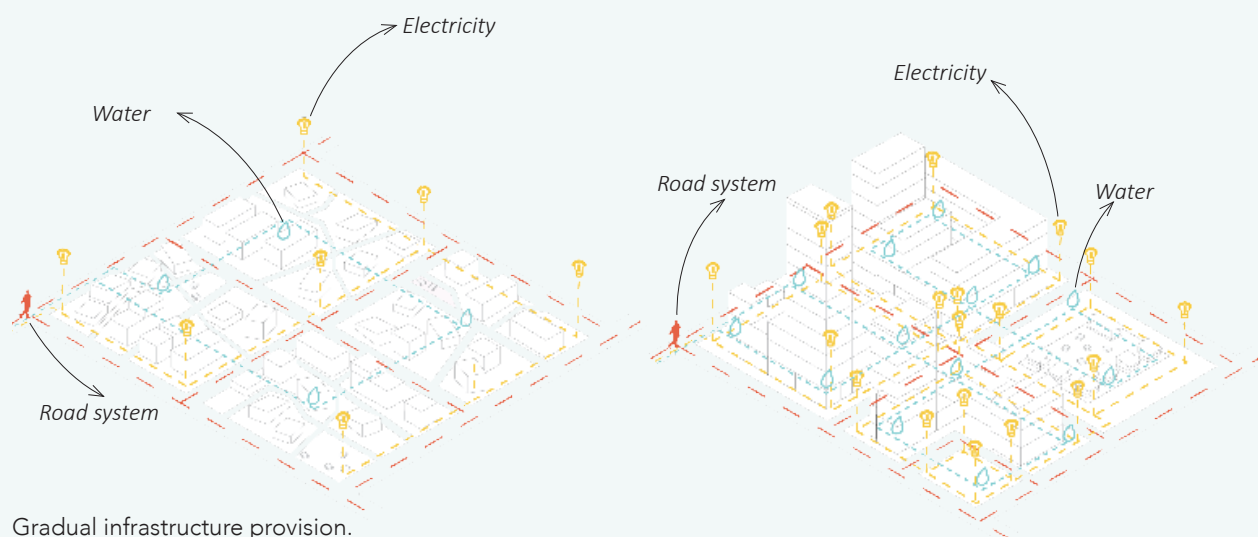


Image 9: Manhattan's plan
(Zhang 2018)

2. *Gradual infrastructure and services provision.*

A common practice in new city developments is for the developer to build out the entire city before the residents move in. This approach can be seen in several new city projects from Kilamba, Angola to Elgouna, Egypt. This approach to urban development runs counter to the iterative nature of cities, leaves little space for market forces or communities to shape the city, constrains organic growth, and increases the initial costs of construction.

To help charter cities overcome the financial challenges involved in infrastructure provision, infrastructure should be deployed gradually over time. Land should be reserved for future infrastructure expansion and planned accordingly, especially with regard to road corridors. The actual development of this infrastructure can be implemented over time, in response to demand. Doing so will not only significantly lessen the financial demands at the outset of a new city project, but will also boost the overall accessibility, affordability, and sustainability of the city.



Gradual infrastructure provision.

Consider the case of public parks. While it is essential to identify land for public parks ahead of development, complete development of those spaces prior to the arrival of residents is not only unnecessary, but a poor use of scarce city resources. A piece of empty land designated for park use can be developed into a garden, playground, or other types of space—responding to changing needs as both the cityscape and resident demands change over time.

Infrastructure deficits in most developing countries are overwhelming. Charter cities can help ease the future infrastructure burden of existing cities.

-An estimated \$130-170 billion per year is needed to develop sufficient infrastructure across Africa, where the annual financing gap is between \$68-108 billion (AfDB 2018).

-An estimated \$330 billion per year is needed to develop sufficient infrastructure across Asia, with costs rising to \$460 billion when accounting for climate considerations. (ADB 2017).

Infrastructure should be deployed in accordance with density predictions, development plans, and community demand. Universal infrastructure provision—the connection of plots and buildings to critical infrastructure like water/sanitation services, power, roads, public transit, digital infrastructure, etc.—should be a key priority for a charter city, but the rollout of this provision will by necessity be staggered and phased.

BOX 6: The Ethiopia Urban Expansion Initiative

The Ethiopia Urban Expansion Initiative was a 2-year pilot project meant to plan for and construct infrastructure in advance in peripheral areas of Ethiopian cities projected to experience significant population growth in the coming years. The Initiative followed a simplified and decentralized plan where both top-down and bottom-up decision-making were incorporated. Road grids and public spaces were established in advance of new urban settlement, but remaining development was left to future inhabitants (Lamson-Hall, 2020). By the project's completion, it led to the development of 570km of arterial roads that open up new land for orderly urban expansion (Lamson-Hall, 2020).

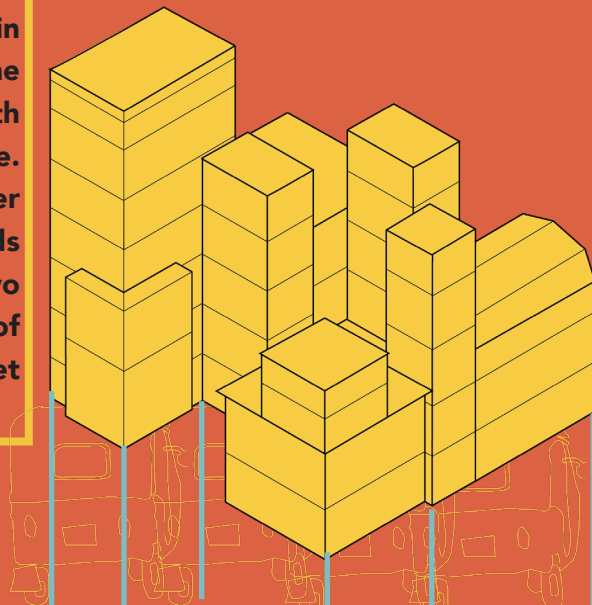


Image 11 and 12: Addis urban renewal initiative (Arup 2021) and the municipal team of Bahir Dar (Marron Institute 2013)

Part Two:

URBAN PLANNING GUIDELINES

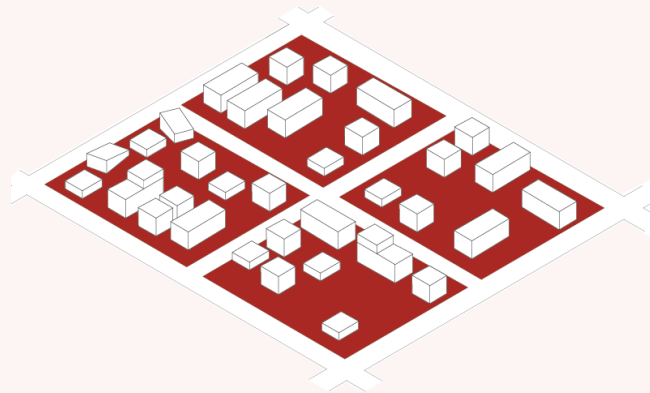
Urban expansion without coordination or critical infrastructure can hamper the growth prospects of a city (Collier et al. 2020). The Urban Planning Guidelines are a tool to help shape the charter city's spatial development and inform the approach of charter city planners' in implementing planning objectives. The guidelines follow the charter city planning paradigm of Guided Organic Growth and the city development values as outlined in Part One. Additionally, these guidelines adhere to the broader approach that the Charter Cities Institute takes towards urban development outlined in the introduction. Part Two discusses the applications of these ideas across a variety of key areas, including zoning and land use regulation, street networks, housing, and more.



Density

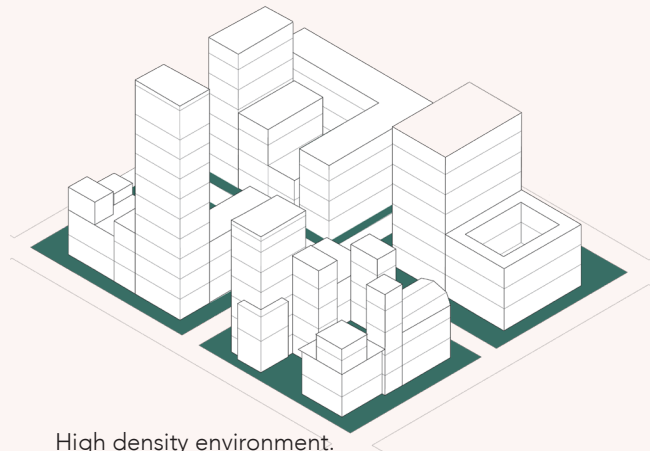
Planning requires density predictions to develop accurate spatial and infrastructure plans. Contemporary planning theories indicate that cities operate more efficiently with higher densities. Denser cities enjoy higher productivity, shorter commutes, lower cost provision of public services, and with more people on less land greater density implies more space left for parks or other green spaces as well as lower per capita carbon footprints. In short, when planning charter cities, compact urban development is preferable to sprawl (MFE 2018).

In the early stages of city development density will naturally be lower, both because “self-built” and temporary housing schemes are likely to be utilized and because there will be relatively more space to build outwards at lower cost. The low-rise environment of the early-stage charter city should be welcomed to allow people from various income levels to come to the city and easily build their own houses or to rent property.



Low rise environment.

In the later stages of city development, density will likely increase. A thriving economy and growing population will boost the demand for land. As the supply of buildable land diminishes and land values rise, new construction will build upwards rather than outwards.



High density environment.

KEY TAKEAWAYS — **To encourage higher densities and facilitate growth:**

—The city should predict and provide the infrastructure needed for dense growth.

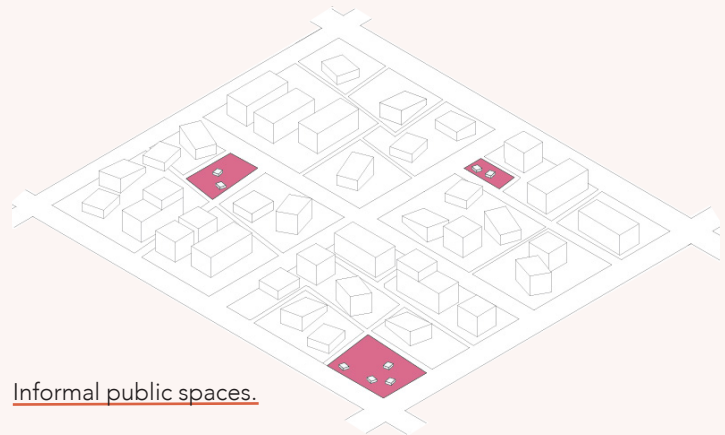
—The city should adjust to density surges through adaptive infrastructure delivery that responds promptly to the city's growth needs. For example, buses are more modular and adaptable to changing circumstances than trains or metros; build with this kind of optionality in mind.



Land Use

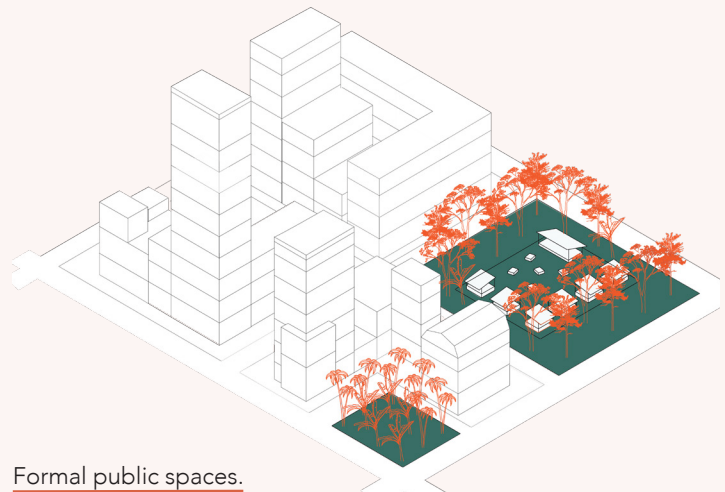
Land-use regulation, if employed properly, can act as a tool to help facilitate the most efficient use of land within a charter city. However, such regulation often fails in allocating land to its most efficient use because of its rigidity and inflexibility.

In the early stages of city development, the city should demarcate public and private functions in accordance with the planned street grid. While public lands and services should be distributed equitably around the city, the development of land allocated for private purposes should be left to community and market forces.



Informal public spaces.

In the later stages of city development, the city should continue the public-private distinction outlined above, making adjustments as needed to ensure public services are widely accessible and affordable, and that private spaces can continue to transition to their most efficient use.



Formal public spaces.

KEY TAKEAWAYS — **The public-private distinction**

- The city should facilitate the allocation of land to its most efficient use by clearly delineating public and private spaces.
- The city should ensure that public services are widely accessible and affordable, focusing on the most essential services first.

Zoning

Most zoning plans are inflexible, allowing only marginal changes to the plan as the city grows. As a result, zoning laws make it difficult for cities to respond to inevitable changes in the preferences and needs of households and firms. In alignment with the paradigm of Guided Organic Growth, these guidelines propose a simplified form of zoning (District Zoning) that allows a charter city to strike the delicate balance of appropriately planning for urban expansion while at the same time making room for emergent forces to shape this expansion.

BOX 7: Ciudad Morazán.

Ciudad Morazan, a charter city located in Honduras' main manufacturing region near the city of Choloma, is targeting light industry and creating a safe, affordable community for ordinary Hondurans (Fitted Projects 2020).. The city has managed to attract the first residents by following the idea of the city as a labor market, and coupling work opportunities and affordable housing. The main zone inside the city is a mixed-use residential and commercial neighborhood aiming at creating a people- and business-centered city and promoting economic resilience (Fitted Projects 2020).



Image 13: Morazán street design
(Fitted Projects 2020)

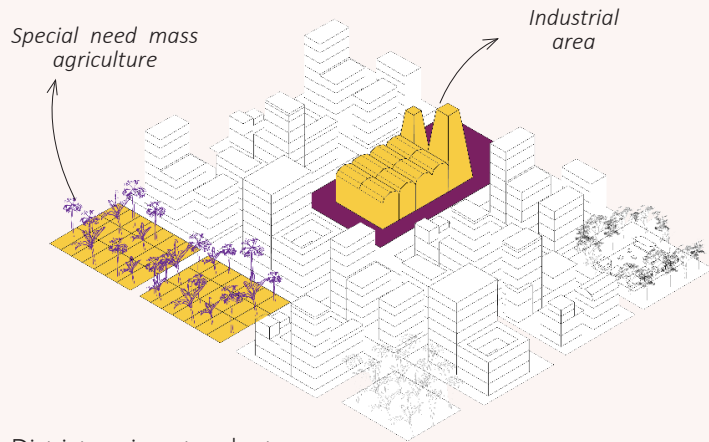


Image 14: Morazán zoning plan
(Fitted Projects 2020)

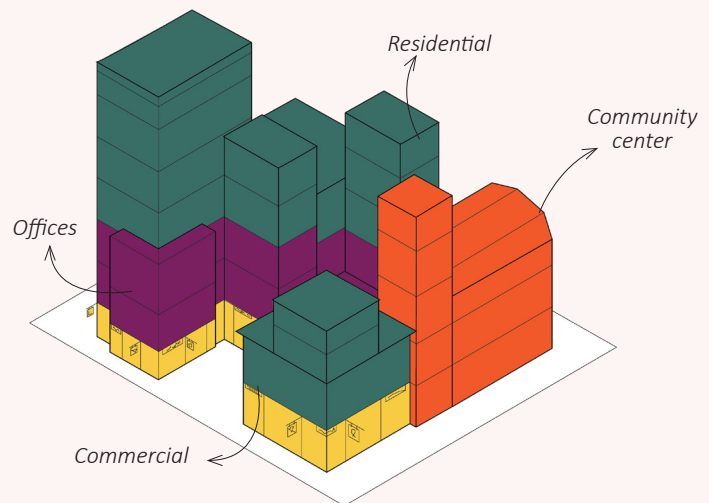
District Zoning aims to identify and separate special cases of land-use that impose significant externalities, while allowing mixed-use for most typical land uses. Mixed-use includes residential, commercial, retail, and office space. Inside a mixed-use zone, these functions would not be forcibly separated. Special function zones may include heavy manufacturing, forestry, or other types of industry.

District Zoning (Mixed used development) should be adopted from **the early stages of city development**, allowing for sustainable and safe mixed-use development residential areas while demarcating spaces for special functions such as industry. Flexibility in district zoning allows for swift, emergent responses to market signals. Unit sizes, building heights, plot coverage, and building setbacks will have minimal regulations.

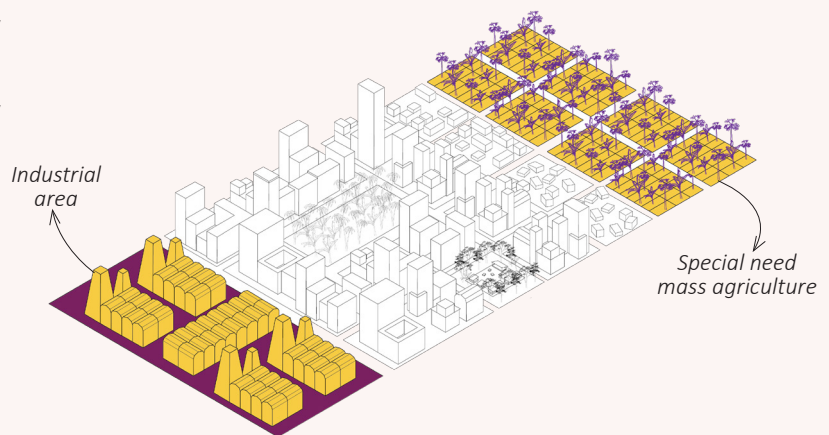
In the later stages of city development, the city should continue using District Zoning and nuisance-based code to control externalities like noise, allowing for mixed-use provision in the neighborhoods as they grow. A charter city should never adopt restrictive zoning practices that severely straight-jacket growth, such as mandating single-family homes.



District zoning at early stages.



Zoom-in of a mixed-use block.



Land zoning at later stages.

KEY TAKEAWAYS — **To maintain effective zoning within a charter city:**

- District Zoning should respect the right of way and the functions of public spaces.
- The city should develop safe transitional spaces between special function zones and mixed-use zones (e.g., between industry and mixed-use functions).
- District Zoning should not be subjected to density restrictions.



Land Subdivision

Land subdivision regulation governs the size and distribution of plots, which determines their possible uses. Land subdivision in new cities is typically very homogenous, which limits the flexibility of land to be put to varied uses at varied price points over time.

BOX 8: 6th of October City.

Located outside of Cairo, Egypt, 6th of October City has imposed a uniform subdivision of plots. Land plots vary between 300m² and 500m²; this limits smaller land plots and thus constrains the supply of cheaper housing options (Hegazy & Moustafa 2013). While 6th of October managed to attract some middle-class residents, it took years for the city to hit its target population, and only finally did so in large part because of the influx of Syrian immigrants to the city.



Image 15: Nile University in October City (Wikipedia)

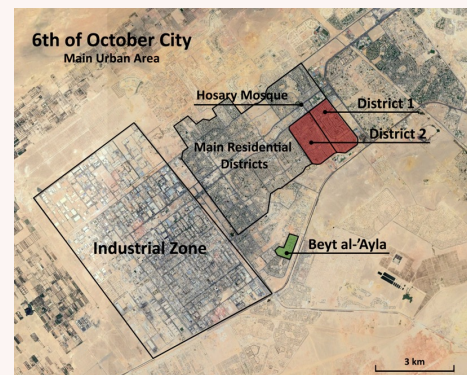
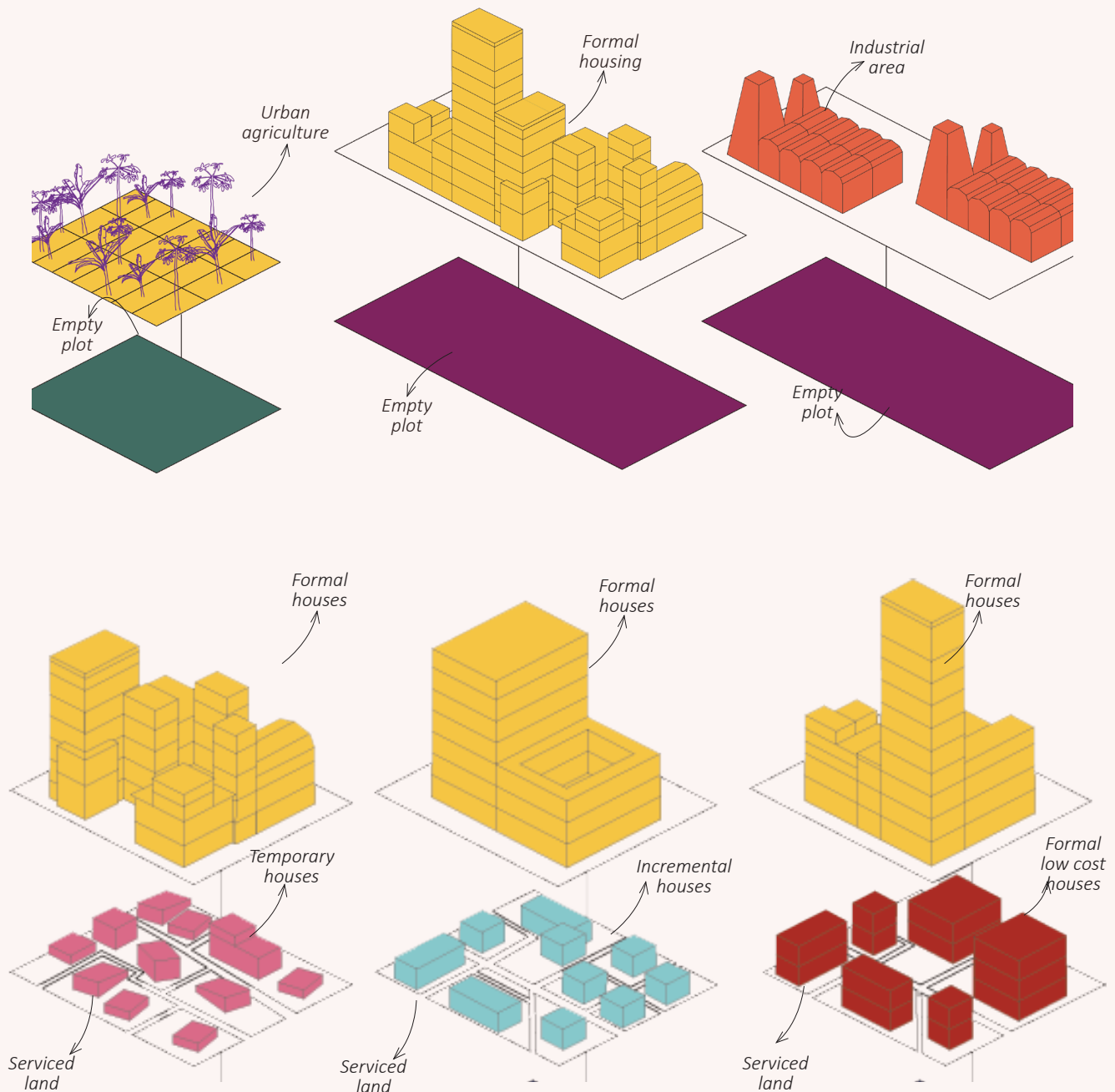


Image 16: October City's plan (Shalabi 2018)

In the early stages of city development, the city should follow traditional subdivision schemes with various land plots and ownership models and allow people to rent, own, transfer, or combine various plot sizes. Variety in land subdivision and ownership models will allow the city to best meet demands for a diversity of land uses. The city should be flexible in allowing incoming residents to the city to self-select and set up their own plots and settlements within pre-existing or nascent neighborhoods (see Box 9, below)—ideally with the help of a barefoot planner (Nelson & Sternin 2021). This relative permissiveness allows for more affordable temporary housing schemes and incremental housing development.

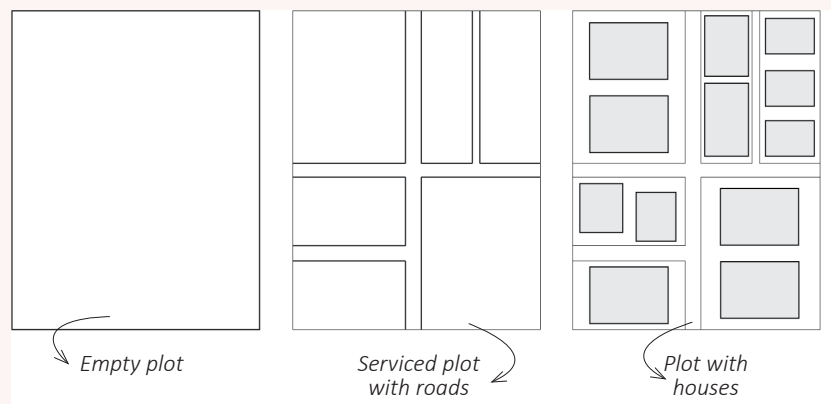
In later stages of the development, traditional subdivisions should expand, responding to market and community demands while maintaining variety in plot sizes and ownership models. More temporary, rudimentary, self-selected settlements and plots should gradually be phased out as the city densifies and requires more complex infrastructure and urban development.



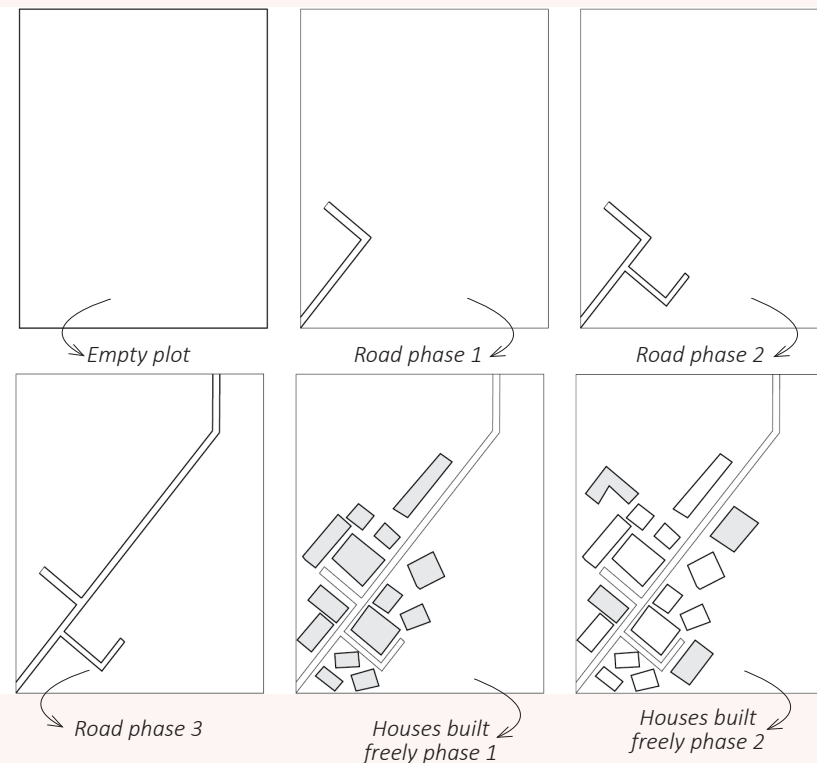
Possible evolutions of land subdivision.

BOX 9: Self-selection plots.

Bhatt and Rybczynski (2003) argue in their article “How the Other Half Builds” that the self-selection of plots of varying sizes, with limited pre-planning, is an effective form of self-determination in land ownership that allows for participation in a greenfield development. This simplified approach to land subdivision can help attract different types of residents from lone entrepreneurs to more traditional families, all with varying personal backgrounds and lifestyles. Not only does such an approach foster variety, but it also fosters a sense of community and ownership over the space.



Traditional land subdivision scheme.



Plot self-selection process.

Street Networks

Street networks affect transportation, mobility, land use, and the accessibility of city labor markets. Street networks therefore have knock-off effects on the effective size of the metropolitan labor market and in turn on the economy's productivity. Through these channels, street networks can be significant drivers of economic growth, affordability, and sustainability within a charter city. For example, a study of street network and spatial pattern changes in Brasilia found that road access improvements resulted in significant per capita GDP growth and also a decrease in spatial inequality (Bird & Struab 2014).

On the one hand, when it comes to street layouts in regular cities, the organic pattern and the loose grid pattern are the most common grids in the Global South (see Annex 3). According to Kostof (1993), and later research by Munson (2013), 48 out of the top 50 populated cities in South America follow a loose grid, and 22 out of the top 30 cities in Asia follow an organic grid. In Africa, 25 of the top 50 cities follow a loose grid while the other half follow an organic grid.



Cities with a loose grid in the Global South.

On the other hand, the streets in most contemporary new city developments either follow (i) a Chinese street grid (a hyper-functional setup dominated by its matrix arrangement) as seen in Kalimba, Angola; (ii) a suburban hierarchy (characterized by single-family detached housing, strict zoning, and the separation of residential and commercial functions) as in Sheik Zayed City in Egypt; or (iii) the international model as in Konzo City, which emphasizes the use of reputed international architecture styles with street grids that have huge boulevards with an overly car-centered network design.



Image 17: Kalimba's residential area
(Badkar 2012)



Image 18: Kalimba's masterplan
(Construction.citic 2008-2021)



Image19: Sheikh Zayed's residential area
(Wikipedia)



Image 20: Sheikh Zayed's plan
(Skyscrapercity.com 2020)



Image 21: view of Konzo City
(Tetra tech 2021)



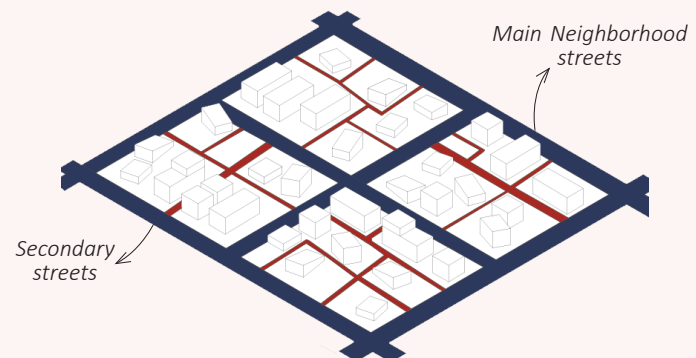
Image 22: Konzo's masterplan
(Konza Technopolis 2021)

A loose or organic grid is the most common pattern in the Global South. However, on a greenfield site, the city needs a definite street pattern to set the right of way and to plan infrastructure appropriately in a rapid-growth context. An established grid makes it easier to deploy infrastructure, subdivide land, and implement changes over time as the city grows. This document offers recommendations for both the primary and the secondary streets in a charter city.

Regarding primary streets: A simple grid system of arterial roads should be developed that establishes the main connectivity axes that provide cross-city mobility. These arterial roads should include pedestrian facilities and facilities for cyclists and e-mobility, with grade separation between uses to ensure safety for all users. These roads can carry trunk infrastructure and should be wide enough to also carry public transportation, such as Bus Rapid Transit lines (Fitted Projects 2020).

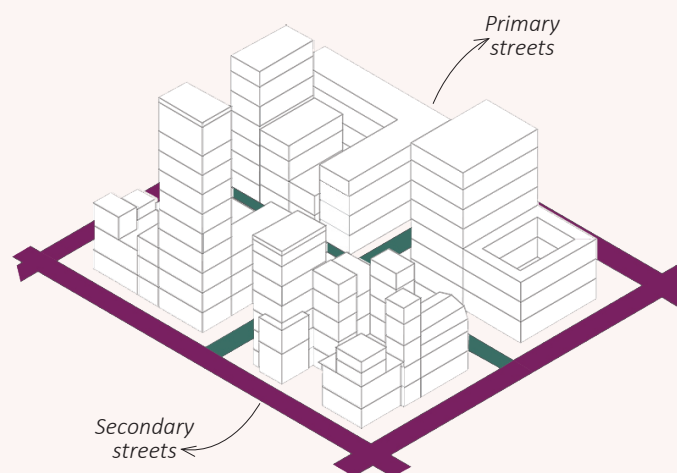
Regarding secondary streets: Secondary streets provide connectivity between and within blocks. Secondary streets should also be wide enough to carry local vehicular traffic including delivery vehicles and private cars, and should include ample space for pedestrians, cyclists, and e-mobility. The provision of shared streets, pedestrian-only streets, alleys, and laneways can be determined on a case-by-case basis.

In the early stages of city development, the city should develop its primary connector streets and its main neighborhood streets to facilitate growth.



Road networks at an early stage.

In the later stages of city development, both secondary and primary street development should be supervised and approved by the city, ideally unfolding as demand arises in line with the demarcated grid plan of the city (with an openness to deviating from this grid plan should circumstances on the ground merit).



Road networks at a later stage.

KEY TAKEAWAYS — **To ensure and maintain spatial planning success:**

- The street network should be responsive to the city's growth.
- The street network should not be rigid and must be open to change and review given prevailing conditions.
- The street network should not be seen as a limitation but rather as a tool to facilitate development.
- The street network should facilitate equitable access to different parts of the city.

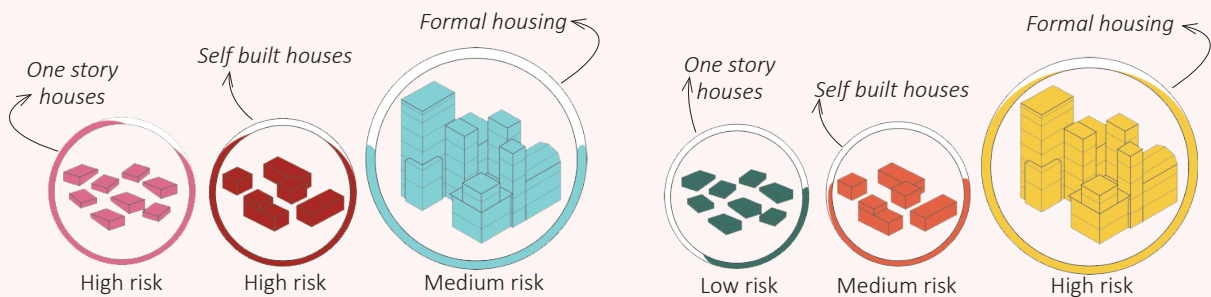


Building Regulations

Building codes and regulations set the standards of design and construction, which ensure both public and occupant safety. This section will briefly address this topic, while greater detail can be found in Chapter 5.2 Land Use Regulation and Building Regulation of the Charter Cities Institute's Governance Handbook (CCI 2021). Building regulations, while aiming to promote safety and health, often prevent incremental housing development. Regulations can explicitly or implicitly make certain types of buildings illegal, which can limit the overall availability of housing and reduce tenure security, among other adverse knock-on effects.

In the early stages of city development, building regulations for one-story housing, temporary housing, and self-built housing should be extremely permissive. Taller buildings, buildings constructed by formal developers, and industrial buildings should be subject to the risk-based assessment framework outlined in Chapter 5.2 of the Governance Handbook (CCI 2021).

In the later stages of city development, the city should continue to balance the needs of inherently riskier structures with the need to ensure regulatory costs do not prohibit development. The city should work with those living in incrementally built housing to ensure their development is safe.



Building regulations evolution.

BOX 10: Overly Restrictive Building Codes Discourage Investment

In the Global South, building codes—along with many other planning regulations—are often copied from codes used in the Global North or from planning codes developed in colonial times. In Algeria, for example, building codes imported from France did not correspond to local building styles and so most homes were technically informal by default. De facto informality limited many Algerians from accessing formal ownership and inheritance, and therefore discouraged investment (Bertaud 2018).

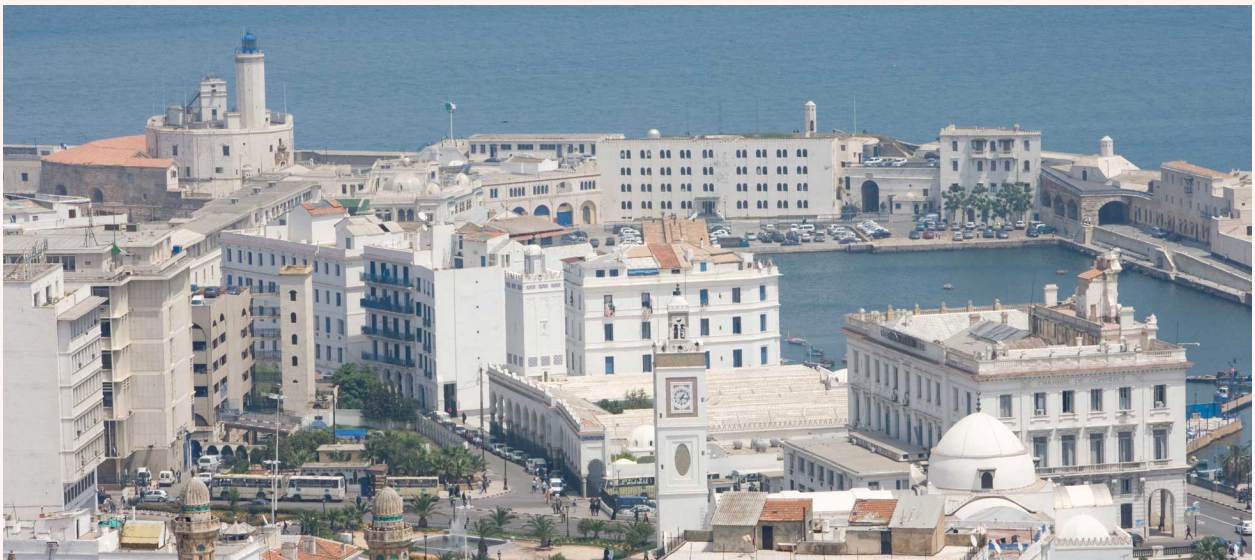


Image 23: A view of Algiers
(Venturesafrica.com 2014)

BOX 11: Cairo's Informal El Matarya Settlements.

The unique phenomenon of high-rise informal settlements in Cairo's El Matarya district provides useful insights for how affordable and accessible housing in rapidly growing cities can be attained, even for the poor. El Matarya's informal, high-rise settlements largely arose from a confluence of three key factors. First, there was a high demand among low-income urban dwellers for inner-city housing that was both affordable and located near economic opportunities. Second, there was forbearance on the part of the Egyptian government—that is, an intentional nonenforcement of the restrictive housing regulations as written in law. And third, given both significant demand and governmental tolerance for more (though technically illegal) housing in Cairo, there was potential for private developers to make a sizeable profit by building dense housing catering to these informal settlers at the 'bottom of the pyramid.' Not only have these unique, high-rise settlements been built, but the Egyptian government has also increasingly connected these high-rises to key infrastructure over time like water and power, as well as to services like education and health centers. These settlements, which have developed into 10-20 story structures, are rich in economic activity and continue to attract new investment as Cairo continues to grow. The combination of citizens developing their own settlements, government providing affordable infrastructure and services (and exercising forbearance), and private developers risking the significant upfront capital required to build these high-rises in hopes of a large return has resulted in an urban development model unique to Cairo. Today, these "informal settlements" are the dominant form of housing for Cairo's lower income segments (Shawkat, 2020).



Image 24: view of El Matarya (Elhanafy 2020)

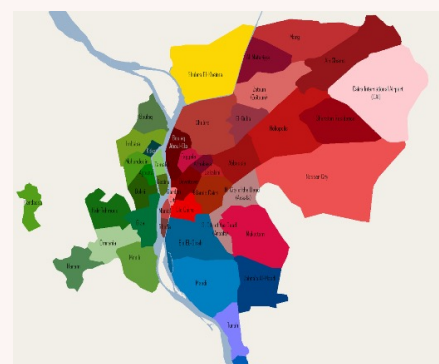


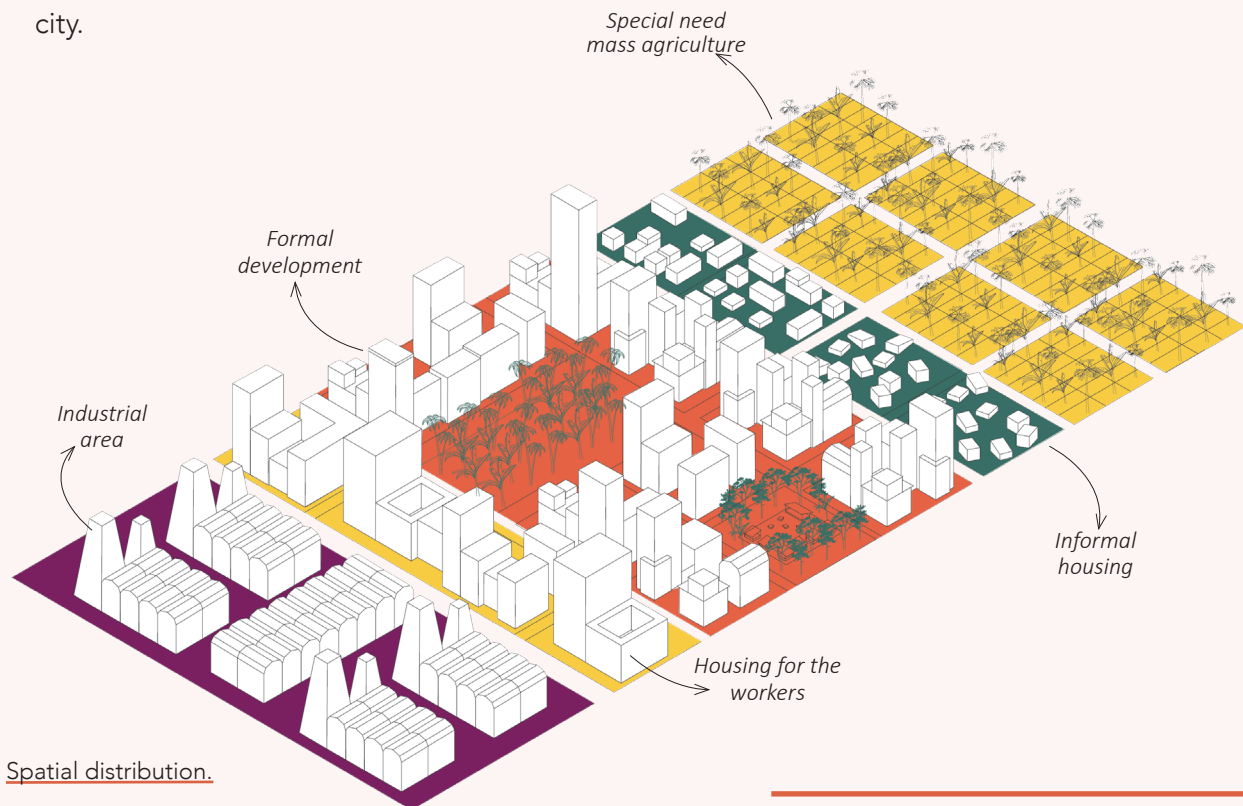
Image 25: Cairo district plan (Wikimedia 2009)

Spatial Distribution Patterns

Cities arrange their spatial distribution through a mono-centric design (a single central business district or CBD), a polycentric design (multiple business districts), or a mix of both. The formation of these business districts facilitates the agglomeration effects that boost growth and innovation. As these districts flourish, demand for space in or near them will rise, and densities will increase naturally as a result (Bertaud 2018).

In the early stages of city development, the grid should facilitate the formation of a CBD as a site to host businesses, investment, and entrepreneurship. Mixed-use zoning should allow for both jobs and residences to be located near the initial CBD, increasing access to employment opportunities. Over time, additional commercial, retail, residential, and other functions will spread across the city.

In later stages of city development, the city should look for emergent agglomeration zones and provide supportive infrastructure in a timely fashion. Planning infrastructure in the expected path of new development can ensure that the area is adequately serviced as more people begin to live and work in that area—as, for example, was done with the Ethiopia Urban Expansion Initiative (see Box 6).



Spatial distribution.

Functions

Cities need residential, commercial, public, and industrial spaces to function. Function allocation should be the result of market and community demands. A core idea from modernist functional planning is the separation of commercial, retail, industrial, and residential land uses. Planning that explicitly separates different land use functions unfortunately still dominates the development of most new city projects in the Global South. Separation of function has created unsafe neighborhoods with little access to services and few 'eyes on the streets', while boosting car dependency where most people cannot afford a car. More recent studies have found that mixed-use compact developments provide a better quality of living for residents and have a lower carbon footprint than non-mixed-use developments (see Box 12, below).

BOX 12: Brasilia, Brazil.

Brasilia was built from the ground up in 1961 to be the new capital of Brazil. Designed by Oscar Niemeyer to resemble an airplane when viewed from above, the city was built following modernist planning rationale with strict zoning laws and height limitations. Imposing very restrictive limitations on the supply of housing, on the use of land in the city center, and on the height of buildings all conspired to increase the costs of housing. This resulted in the movement of lower income families to satellite cities or shantytowns on Brasilia's outskirts, with Brasilia proper remaining almost exclusively for wealthier families and individuals (Waldek, 2020).



Image 26: A view of Brasilia (UNESCO 2018)

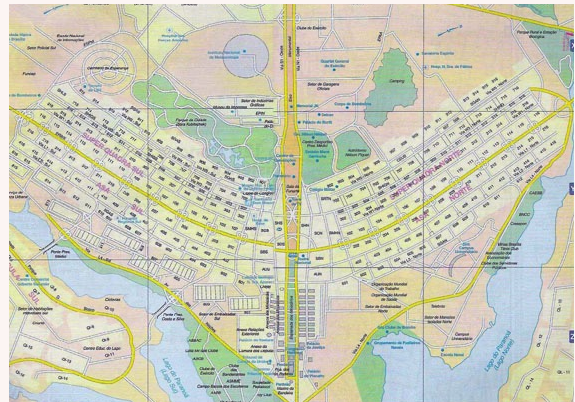


Image 27: Brasilia's map (Vidiani.com 2011)

BOX 13: Slums Growth in Kenya.

In Mukuru Kwa Njenga, a slum in the east of Nairobi, most dwellings are paired with commercial activities. The ground floors of these dwellings are often used as a commercial unit while the family resides upstairs and, in some cases, women would sell and offer services like sewing out of their home directly. The state has even been effective in many cases at connecting these dwellings with needed services, creating mixed-use structures that combine commercial, residential, and service uses (Horn 2021). The allowance of these in-dwelling commercial activities enables families to nimbly take advantage of economic opportunities as they arise, and the proximity to public services boosts not only connectivity and access to these services, but also enhances the productivity of commercial activities.

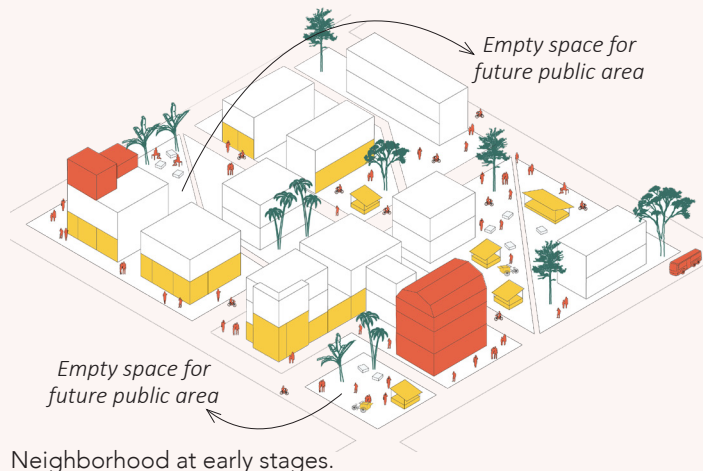


Image 28 A view of Mukuru Kwa Njenga
(robyrossi.it)

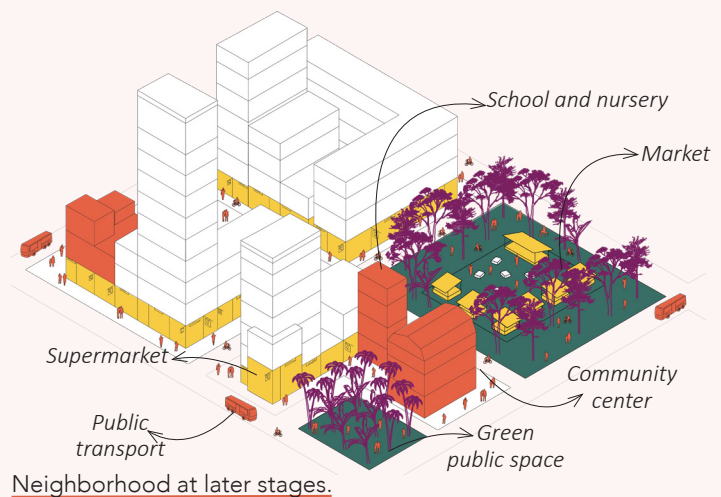
A. Neighborhoods

In a charter city, different neighborhoods will arise through different means. Some neighborhoods will be developed mainly by the city, some by developers, some neighborhoods will be developed as the result of large employers or anchor tenants moving there, and other neighborhoods will be more emergent, developing in a bottom-up, community-driven fashion over time.

In the early stages of city development, the location of infrastructure and public services should be demarcated such that these public goods and services are affordable and accessible, even within neighborhoods that arise organically (some of which will be informal settlements that form as the result of low-income families moving in in search of economic opportunities in the charter city).



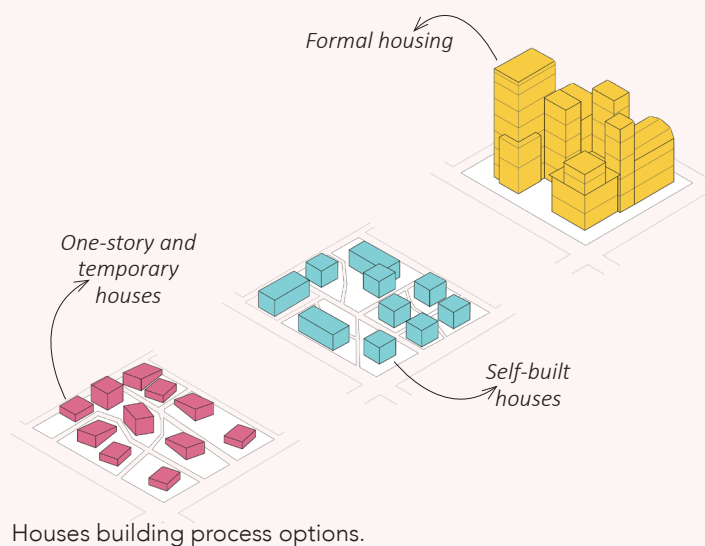
In the later stage of city development, the city must ensure that essential services, such as schools, nurseries, supermarkets (or their equivalent of street vendors), and needed basic health services can be found within walking distances of most homes. Additionally, neighborhoods should enjoy access to public and green spaces and community centers. As the neighborhood grows, public transportation services must be adaptable and accommodative to growth.



B. Housing

It is essential to have various housing options to attract people from different socioeconomic backgrounds. Allowing for variety in land plot sizes should allow the housing market of a charter city to meet the needs of residents at a variety of price points. The housing schemes outlined below aim to cover all the different types of housing that could be needed in a charter city.

Self-built housing: Labor costs often comprise 30-40% of the total build cost of new housing. Self-building gives low-income residents a better opportunity to affordably locate in a charter city by saving on these labor costs (World Bank 2015). The self-selection land subdivision approach, discussed above in Box 9, allows low-income residents to build a more informal dwelling at first, with the logic being that in the meantime they'll be accumulating wealth to eventually transition to more formal housing when this option becomes financially viable.



BOX 14: Self-Building in sub-Saharan Africa. In much of sub-Saharan Africa, houses are often built gradually over many years as the owners build their wealth. In Ghana, for example, it is estimated that 45% of the housing stock was incrementally self-built (Okyere & Kita 2016). These incremental building practices can also be seen in the ever-growing informal settlements of Cairo and Lagos's Mushin and Ojuelegba. The re-bar that sticks up from most of the housing stock across many cities and towns of the Global South is a testament to this pervasive practice of self-building gradually over time.



Image 29: Cairo's house extension
(Incrementalhouse.com 2008)



Image 30: Addis incremental construction
(Holcimfoundation.org 2014)

Market housing: The combination of a liberalized land-use regulatory regime, risk-based building assessment, and effective infrastructure pre-planning will allow for private housing developers to provide housing on a large scale at lower cost and will lower barriers for small developers to contribute to the housing stock. In the earlier stages of city development, private developer-built housing will typically be a complementary housing option offered alongside self-built and live and work options (rather than a substitute for them). In later stages of development, as the city formalizes over time, it's likely that developer-built housing will become the dominant form (though it still may not be the exclusive form).



Image 31: Market housing in Ho Chi Minh
(The borgen project 2015)

Temporary housing: Temporary housing solutions can be a great affordable housing alternative, especially in the early city development stages. Millard Fuller Foundation (MFF) housing (a single-bedroom, semi-detached MFF unit at \$8,040 USD per unit) (Rust 2019), lamina houses (built structures with sheets of corrugated tin) (GGT 2018), and 3D printed housing (quick and cheap to build at scale at \$4,000 USD per unit) (IconBuild 2019) are some of the low-cost housing solutions that the city, developers, and employers can explore. Some of these structures can be developed into more permanent solutions and attract low-income families over a longer time horizon.



Image 32: MFF house
(Millardfullerfoundation 2020)



Image 33: lamina house
(Stott 2014)



Image 34: 3D house
(Harrouk 2021)

C. Commercial Functions

Mixed-use zoning allows commercial and retail activities of different scales to spread all over the city and agglomerate in emergent business districts. Beyond the detailed planning processes of public infrastructure such as roads, electricity, sanitation, water provision and telecommunications, little proactive planning on the part of the charter city administration should be necessary for businesses to form and thrive. Commercial activities should be encouraged to grow within the mixed-use scheme of the city.

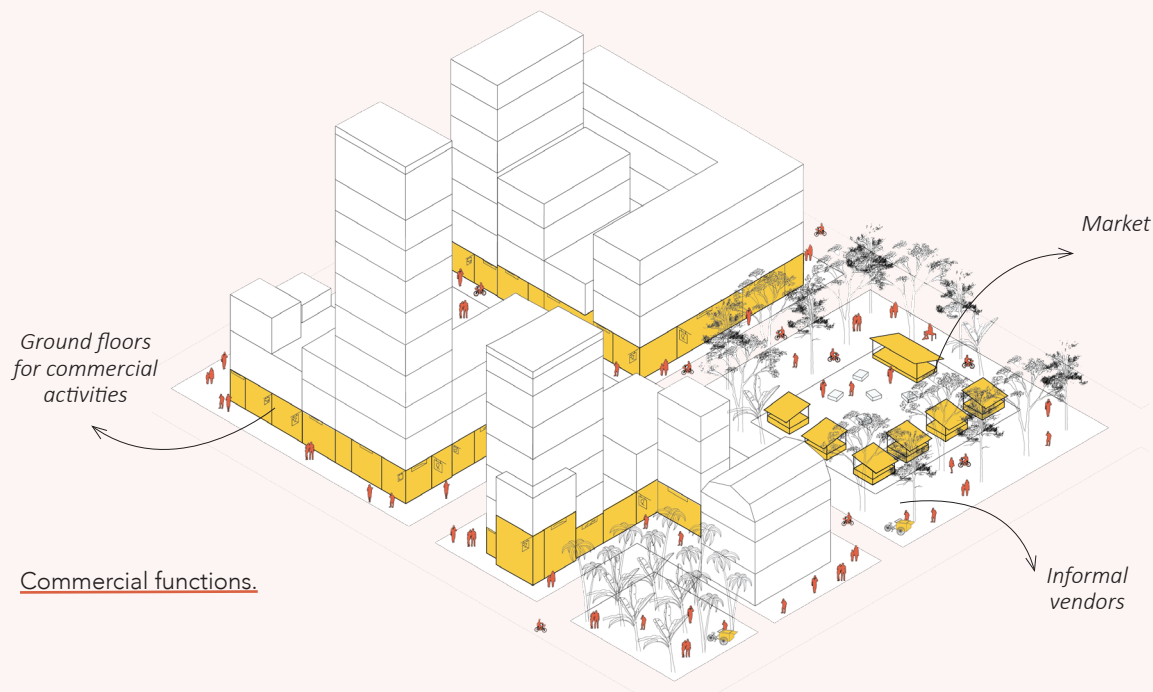


Image 35: Mini market in Addis Ababa
(Wikimedia 2014)

Informal commercial activities: Informal vendors are a big part of the Global South's commercial and retail economy. Consequently, they should be included in charter city plans.

The city should encourage informal entrepreneurship through:

- Allocating some of the demarcated public spaces in the city for the vendors to use for business activity.
- Allowing vendors to be mobile and move wherever demand for their products/services arises.
- Involving local vendors in planning decisions for new market areas.
- Making the transition from informality to formality as easy and seamless as possible.



Image 36: Informal vendors transporting their merchandise
(Torgovnik 2021)

Commercial activities in mixed-use buildings: Ground floor commercial activities keep streets alive and safe, commercial activities should be allowed in all floors in a mixed-use development.

Standalone retail: Mixed-use zoning does not demarcate land for standalone retail (e.g., department stores, malls, and hypermarkets). While standalone retail should not be the dominant form of commercial and retail inside a charter city, a developer or contractor should be permitted to use the land for standalone stores and malls.

Workshops and small industries: Cities have been trying to separate small shops from residential units for years because of noise pollution and other concerns. This separation often results in longer commute times with increased prices for services.

The city should encourage the existence of workshops and small industries through:

- Providing the needed infrastructure to accommodate the workshops.
- Mediating between the workshop owners and the surrounding community if needed.
- Supporting emergent productive clusters (e.g., many carpentry shops open in one specialized area, but as a result of co-locating may require enhancements to pre-existing infrastructure levels like, for example, increased electricity provision).



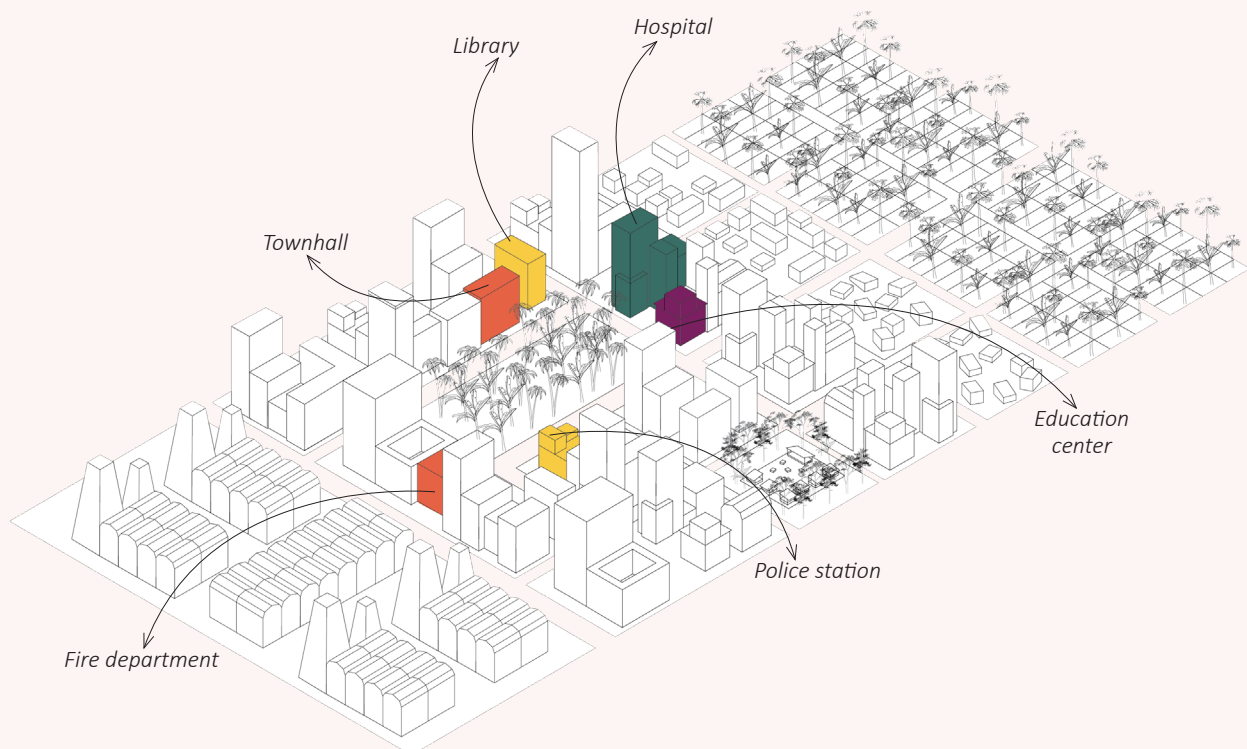
Image 37: Metal cutting workshop in Mumbai, India
(bdnews24.com 2018)

D. Public Services

The location of public services should be planned within the initial layout of the city. These services should be deployed gradually as the population grows and the city expands. Public services can range from education and healthcare to emergency services to landscaping and recreation. The location of essential services, such as a hospital, should be planned earlier, whereas non-essential services can be deployed later more directly in response to demand. It should be noted that simply because some of these public services are demarcated in advance does not imply they should solely be publicly provided. This is especially true in the early stages of the city. If private or hybrid provision of educational, health, water, and other services arises this should be permitted and welcomed, given the scarce resources and limited capacity of the city administration in the initial phases.

It is important that public services:

- Are not separated or segregated from other functions within the city, but distributed around the city in mixed-use arrangements co-mingling with residential and commercial functions.
- Are widely accessible and affordable across neighborhoods.



Public services distribution.

Public open spaces

Public spaces allow people to meet, get to know each other, and develop a sense of belonging to their local community, and consequently the broader city.

In most new cities, public spaces are either developed completely by the city without any local participation or are simply not included in the master plan. Both approaches allow for little to no community involvement in developing shared spaces, resulting in spaces that go underutilized because they are not in line with local resident demands.

Neighborhood-level public spaces (green spaces, public spaces, public parks, and community and culture centers) should be demarcated within the neighborhood design and allocated as a public good. They should not be highly developed or overdesigned. They should be developed through a co-creation process between the residents and the city.

Co-creation processes are essential for the social sustainability of the city:

- They foster social cohesion by allowing residents to meet and build together.
- They build a sense of belonging to and ownership over the neighborhood and the city.
- They ensure development is local, contextual, and fulfills community needs.
- They encourage greater use of public spaces by being more in line with needs, which results in more “eyes on the streets,” bolstering these communities’ ability to police themselves and in turn lowering crime.

While neighborhood-level spaces should have more citizen control, the city should take the initiative and develop major parks and spaces that increase resident quality of life and serve as nodes of social interaction and exchange. These central spaces help tie the city together and develop a shared identity.

Conclusion

New city master plans are typically developed in one of three main forms: (i) an American suburb, (ii) a Chinese grid, or (iii) a city focused on international architecture, shiny buildings, and monumentalism attempting to look like a new Dubai or Singapore (Watson, 2013). All three models share common and detrimental flaws. First, their master plans are overly rigid and restrictive. Second, the high cost of upfront capital results in unaffordability that often crowds out low-income residents. Third, and most importantly, their exclusionary decision-making processes fail to adequately and quickly respond to community demands.

A charter city is a well-planned city, but not an over-planned city. It follows the Guided Organic Growth paradigm, a more decentralized, bottom-up planning paradigm for new city developments and charter cities. By better delivering on (i) the urban growth needs of a new city, (ii) community inclusivity, and (iii) overall affordability, the Guided Organic Growth paradigm stands as a marked improvement over status quo paradigms that currently dominate new city building.

The following tables provide an overview of the City Development and Urban Planning Guidelines for a charter city.

Paradigm	<p>Guided Organic Growth</p> <p>(1) New city making as shared spheres of activities between the urban developer, the host country governments (national, regional, and/or local), and the community.</p> <p>(2) New city making as a combination of top-down and bottom-up processes.</p> <p>(3) New city making as a short- and long-term process.</p>
Planning process	<p>(1) Demarcation of private and public functions.</p> <p>(2) Gradual infrastructure and services provision.</p>

Planning Guidelines

Density	Facilitate higher densities and allow for increased densities over time.
Land use	Public and private uses demarcated. Minimal restrictions over private functions.
Zoning	Mixed-use zoning and nuisance-based codes.
Street networks	Main streets should follow a simple loose grid. Streets should be developed to facilitate growth and respond to community and market needs.
Land subdivision	Simple grids should guide traditional subdivisions patterns. Various land plot options and ownership models.
Building regulations	Follow a risk-based approach to determine the level of building regulations assessment and scrutiny. Greater risk projects should undergo greater scrutiny. Self-built/self-help housing should be subject to less regulatory scrutiny.
Spatial distribution pattern	Facilitate CBD growth and provide needed infrastructure for emerging agglomerations.

Functions

Neighborhoods	Human-centric, dense, compact, well-connected, mixed-use.
Housing	Different schemes: self-determination schemes, live-and-work schemes, market housing, temporary housing.
Commercial and Retail	Formal and informal schemes diffused throughout the city.
Services	Accessible and affordable across all neighborhoods. Not separated from other functions (planned in a mixed use design).
Public spaces	Major public spaces (well designed, city-led). Neighborhood level public spaces (allocated by the city, but developed through a co-creation process).

Part Three:

MOBILITY GUIDELINES



While there are many geographic, social, cultural, and other factors that shape the development of cities, cities can ultimately be conceived of through the lens of labor markets. Larger cities, and therefore larger labor markets, are more productive and more innovative because they feature more people exchanging goods, services, and ideas in a single, concentrated location. However, a larger labor market requires the ability to travel within that labor market efficiently. A city that emerges organically will effectively allocate jobs and housing near each other, more so than a city planned in detail from the top-down would. At the same time, an effective city government must use its land use policies and transit system to expand access to that labor market. This creates a virtuous cycle where the city becomes more productive as more people can access their desired employment in a timely and low-cost fashion, and as more firms can select from a more diverse set of workers. This virtuous cycle goes beyond matching employers and employees—it establishes the conditions for learning and for the generation of new knowledge.

Lots of transportation infrastructure projects fall into the trap of monumentalism; building big, shiny, and expensive railways or highways or airports that are way out of proportion to the underlying need, but—as highly visible projects—serve a political desire to be seen delivering services. Sometimes this penchant for monumentalism can lead to unsustainable indebtedness and even macroeconomic instability. In order to mitigate this wasteful temptation towards monumentalism, each transit project should be judged on its own merits through an objective cost-benefit analysis

A well-functioning transportation system can help expand access to jobs, attract new businesses, unlock new sites for development, and foster healthier and greener spaces (Rodrigue 2020a). In *Order Without Design*, Alain Bertaud presents the city as a labor market. Bertaud (2018) argues that better land use and transportation lead to a more connected, functional, and efficient labor market, and by doing so help spur city growth. A city's productivity over time depends on its ability to maintain mobility as it grows. As essential as it is, the connection between transport and economic development is too often ignored in the urban development policies of many cities of the Global South (Bertaud 2018).

Box 15: Urban Transportation Challenges.

- Traffic congestion
- Long commute times
- Inadequate public transportation
- Little support for non-motorized transport
- Environmental impact of ineffective transportation (Rodrigue 2020)



Image 38: Motorcycle drivers in the streets of Ho Chi Minh, Vietnam (Avakian 2015)



Image 39: Manila's commuters approach the transport at early morning to avoid rush hours (Lopez 2019)



Image 40: Crowded Daladala in Dar es Salaam
(Howafrica.com 2018)



Image 41: A street in Addis Ababa with no sidewalks or streetlights
(Halais 2020)



Image 42: Air pollution in Delhi, India
(OECD 2017)

This section shows how a charter city can build for mobility, which enhances both the city's economic potential and its longer-term sustainability. It highlights the many possible approaches to improving urban mobility, the principal concepts that should shape their implementation, and the likely impacts on the city.

Mobility Goal

A charter city's main mobility goal, explored further in detail in this section, is **to maximize the number of jobs reachable from any point in the city within 30 minutes**. This primary goal necessitates strategies that encourage a more compact, walkable city, with cycling or other non-motorized infrastructure as well as a reliable, affordable public transportation system.



Mobility Strategies

1. Accessible transport
2. Minimizing the need for private car usage
3. Allowing for and encouraging non-motorized modes of transportation

This subsection explores how the above three guiding strategies will influence transportation planning and economic outcomes in the city. It also explores how a charter city can overcome some of the most common transportation challenges facing existing cities.

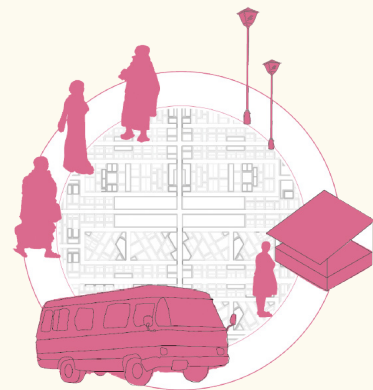
1. Accessible transport systems

Sustainable Development Goal 11.2 calls for the provision of **safe, affordable, accessible, and sustainable** transport for all (UN 2019).

Safety

Safe transport for women

An estimated 80% of women are afraid of being harassed in public spaces in developing countries (Carvajal et Alam 2018). Transportation safety concerns in developing countries can decrease women's participation in the labor market by 16.5%. This is an unconscionable loss of human potential. Ensuring safe transportation improves women's access to work, increases their productivity and incomes, provides women with more bargaining power in their own households, and, by doing so, often increases the social outcomes of their children (UN Women 2018).



The city should ensure women safe access to transportation by:

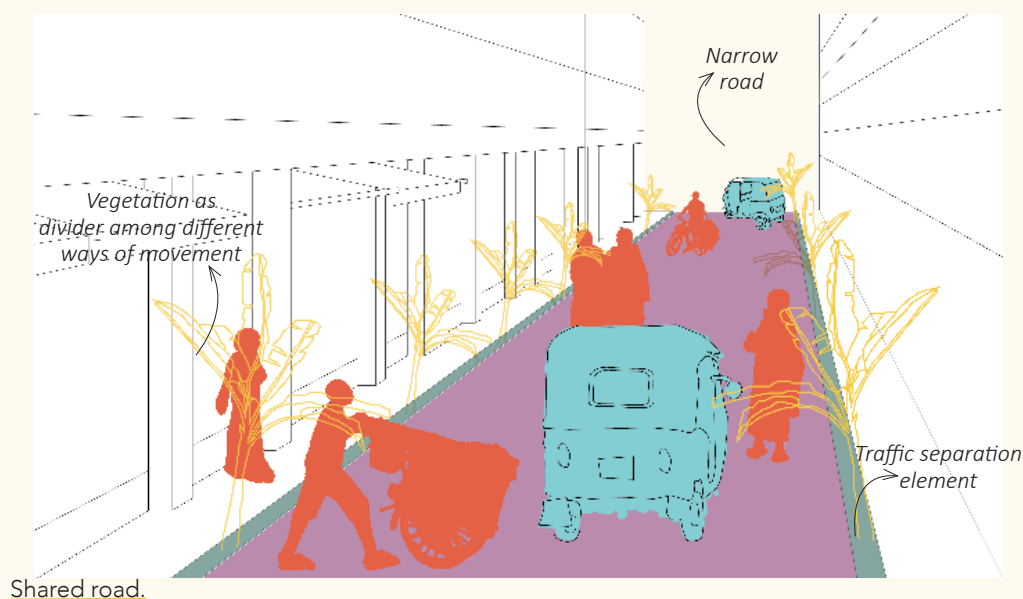
- Hiring more women drivers and operators so that women passengers feel more empowered to voice their concerns if they are harassed (Sur 2015).
- Fostering more women-owned and operated businesses can encourage women to use public spaces more (e.g., public markets, streets, transit, parks, etc), as the 'eyes on the streets' are other women who are more likely to report wrongdoing or misdeeds directed at women.
- Improving street lighting can encourage more women to use public streets at any time (Sur 2015).
- Including women in the transportation policymaking process (ITF 2018).

Road safety

In 2018, traffic accidents were the leading cause of death for people aged 5-29, mainly affecting non-motorized riders (WHO 2021). In 2017, 1.28 million people died from road accidents worldwide (WHO 2018). The cost of car crashes amounts to 1% of GDP in low-income countries, 1.5% in middle-income countries, and 2% in high-income countries.

The city should ensure safer roads by:

- Developing safe and sustainable infrastructure for non-motorized travelers.
- Developing mechanisms to manage wider-streets and urban highways.
- Being responsive to people's mobility needs and demands as the city and labor market grow.



Road safety interventions improve welfare benefits to society. The World Bank used data on road traffic deaths and economic indicators across 135 countries and found that, on average, just a 10% decrease in road traffic deaths leads to an increase in real GDP per capita of 3.6% over a 24-year period. Halving traffic deaths over this same period could yield increases in GDP per capita of 14% in India, 15% in China, and a full 22% (almost a one-quarter increase) in Thailand. These findings suggest that investments in road safety pay for themselves many times over. Several effective policies are recommended, including lowering and enforcing speed limits, decreasing the prevalence of drunk driving, boosting seat-belt usage through both public awareness campaigns and enforcement, and incorporating road safety in the planning, design, and operation of roads (World Bank 2018).

Affordability

Low-income residents in emerging markets spend a disproportionate amount of time and money commuting relative to wealthier residents of the same city. Hours spent commuting limits an individual's productivity and earning potential, while also cutting into their time spent with family or on other leisure activities.

In Brasilia, transportation expenditures can constitute about 26% of a minimum wage worker's income (Carruthers et al. 2016). In La Paz, Bolivia this same figure is even higher—a staggering 33%.

The city should try to minimize transportation expenses for city residents by:

- Prioritizing less capital-intensive forms of transit (e.g., utilizing buses over trains).
- Implementing a more compact, mixed-use land use design that allows people to live closer to where they work.
- Designing streets, public spaces, and infrastructure that encourage walking or other non-motorized forms of transit (e.g., cycling if the topography of the city is suitable).
- Encouraging private modes of transit (i.e., micro transit solutions like minibuses or TukTuks; see, for example, Jacqueline Klopp's work on integrating minibuses into Nairobi's overall transit planning).
- Supporting work-related mobility trips and enacting policies to minimize their cost.



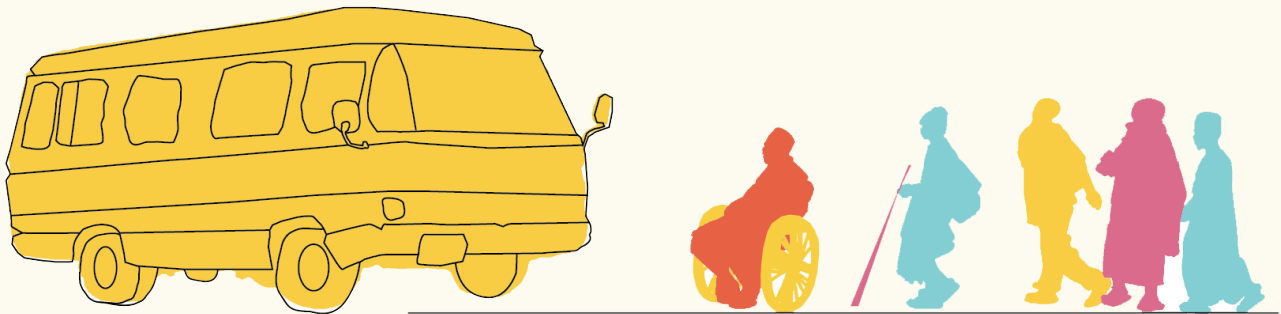
Accessibility

People with disabilities, the elderly, and others with reduced mobility often face significant challenges when traveling in urban environments. Difficult or unsuitable steps and walkways, long distances, hills, and other factors can severely limit mobility for many urban residents. Limited mobility can prohibit these groups from accessing employment, healthcare, public services, and more, significantly reducing their quality of life.

Accessibility issues should, of course, follow a population threshold to make it justifiable for the upfront investment. For example, sidewalk bumps, among other accessibility measures, are likely to be added in later phases of the charter city as the population grows.

A charter city should ensure physical accessibility by:

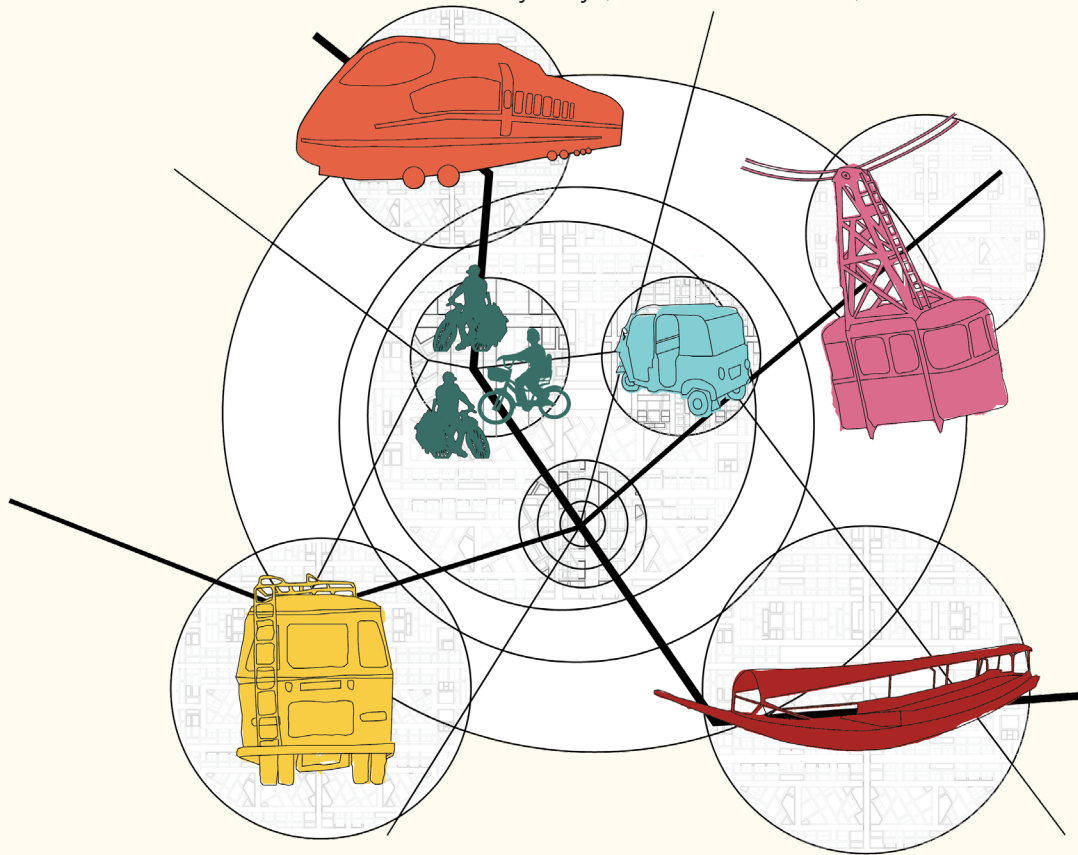
- Providing wheelchair-friendly buses.
- Building sidewalk bumps for sight impairment.
- Conducting regular assessment and maintenance of sidewalks.
- Distributing transit services stations equally across neighborhoods (contingent on demand).



Physically accessible public transport.

Sustainability

About 15% of the total greenhouse gases and 22% of CO² emissions are attributed to transportation, which primarily involves road, rail, air, and marine transportation (Rodrigue 2020a). Many cities around the world suffer from the consequences of air pollution. For example, the Air Quality Life Index shows that the average New Delhi resident would live nine years longer in the absence of Delhi's remarkably high levels of air pollution (CCI 2021). Substantial vehicle emissions can cause serious health problems, affecting the immune system, the respiratory system, and even cognitive abilities, among others. The health cost in the United Kingdom associated with vehicles is around £6 billion yearly (Brand & Hunt 2018).



Developed public transport system.

The city can support sustainable transportation by:

- Providing affordable and accessible public transport, such that individual car use is significantly diminished (in later stages of a charter city imposing congestion pricing can help here). Minimizing car usage is discussed more in the next subsection.
- Encouraging the use of electric as opposed to fossil fuel-based vehicles and public transport (when economically viable).
- Imposing a carbon tax In later stages of a charter city can efficiently reduce emissions (after a threshold level of economic activity is taking place and a sufficient population is living in the city).

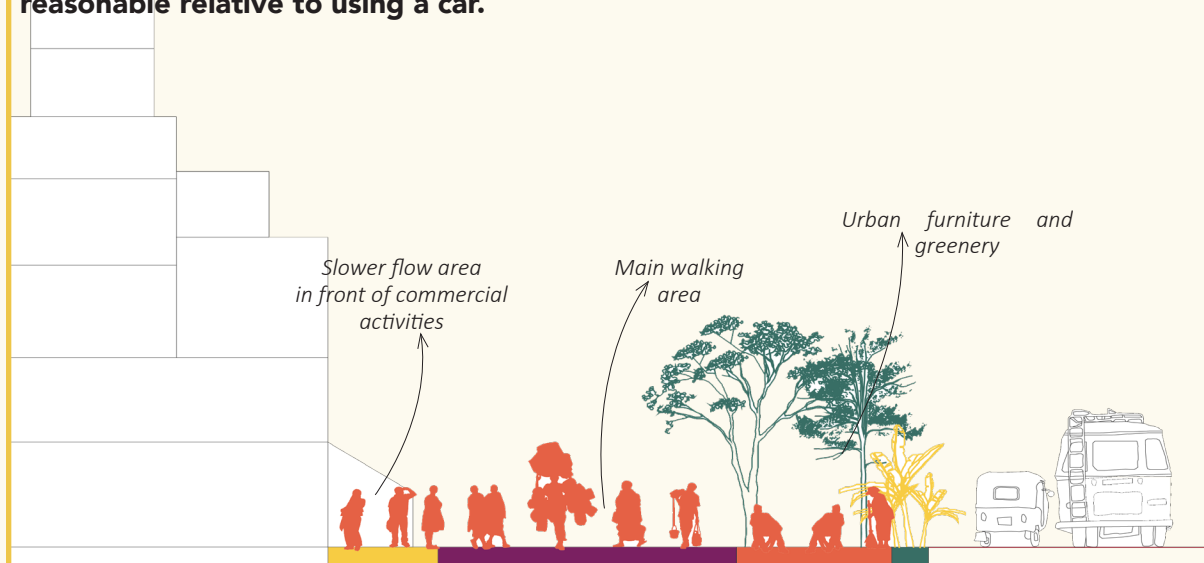
2. Minimize Car Usage

In urban areas, harmful automotive emissions are responsible for anywhere between 50% and 90% of air pollution (Topacoglu et al. 2014). Outdoor air pollution causes 3.7 million deaths each year (FIA 2019). In Africa, air pollution-related deaths have grown by nearly 60% in the last 30 years (UNICEF 2019). In 2020, there were 54,000 premature deaths in New Delhi alone associated with air pollution (Harting 2021). Minimizing car use helps mitigate all of these issues.

Minimizing car usage results in:

- Direct dividend: Less traffic congestion and fewer traffic-related accidents and deaths.
- Environmental/Human Capital dividend: Better air quality, environmental sustainability, and cognition.
- Urban/Economic dividend: Redirection of the city's resources towards more sustainable transportation modes, which enhances access to affordable transit and reduces cost of living (especially for lower income segments).

The best way to minimize car usage is to limit each resident's dependence on a private car to get to work, to school, to shops, and to other daily activities. Doing so requires alternatives that are safe, affordable, timely, proximate, and reasonable relative to using a car.



Pedestrian road.

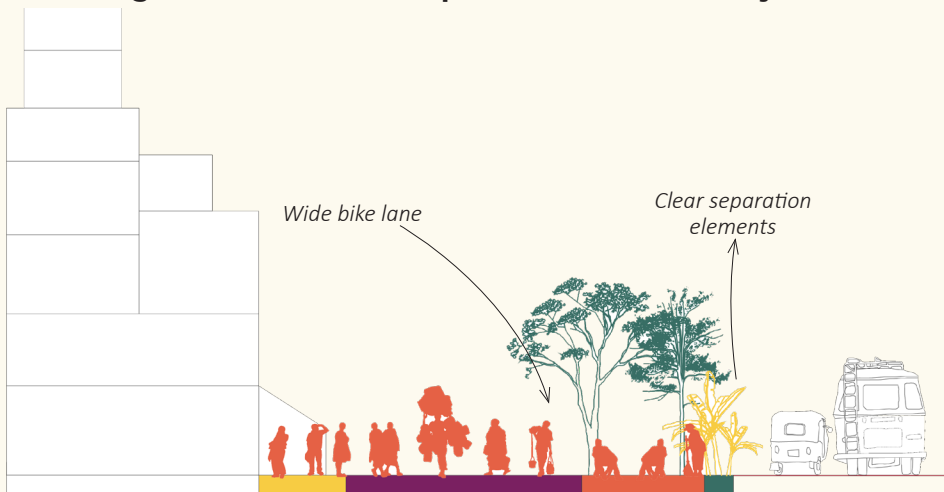
3. Prioritizing Non-Motorized Transportation (NMT)

Non-motorized transportation (NMT)

includes all types of mobility that do not rely on an engine. This includes walking, cycling, and other small-wheeled transports. NMTs are essential components of a multimodal transport system. They reduce congestion (bicycles take up less than a third of the space of a vehicle, and pedestrians take up around a sixth), consume less energy, minimize air pollution, and decrease transportation costs.



Prioritizing non-motorized transport can be achieved by:



Bicycle lane.

- Providing safe and adequate infrastructure for cycling (e.g., protected cycling lanes) and for walking (e.g., wide and connected sidewalks), as well as designing safe connections and networks between neighborhoods.
- Placing traffic signals at intersections when needed.

Regulatory Tools

Besides the planning interventions mentioned above, some regulatory tools have shown great promise in providing better transportation systems:

- Low emission zones (e.g., downtown) or congestion pricing can limit usage while providing revenue to non-motorized alternatives or public transport usage.
- Physical restraint measures like pedestrian zones and speed restrictions (e.g., 30km/h).
- Road pricing curbs traffic jams during peak hours.
- Pricing both off and on-street parking at market rates can discourage car usage while also generating revenue for public improvement.

Box 16: Bogota Plan Bici (Bike Plan).

The plan was introduced in 2013 to encourage government officials and everyday people to cycle more. The plan included:

- Workplace incentives for public officials (half-day of leave per 30 days of bike commuting trips).
- Requirements for public buildings to allocate 10% of the parking spots for bicycle parking.
- Discounted fares for inter-modal trips between cycling and mass transit.

The results:

The plan resulted in the development of 480km of new bike lanes in Bogota, and currently citizens take 800,000 cycling trips per day (more than the number of daily taxi trips and almost half of the trips made by cars). Because of these improvements, Bogota now ranks 12th in the Copenhagenize Index of bicycle friendliness.

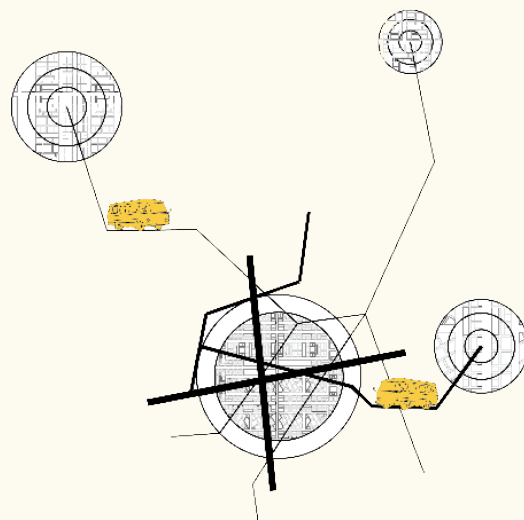


Image 43: Bikers in Bogota
(Pardo, 2020)

Regional Accessibility

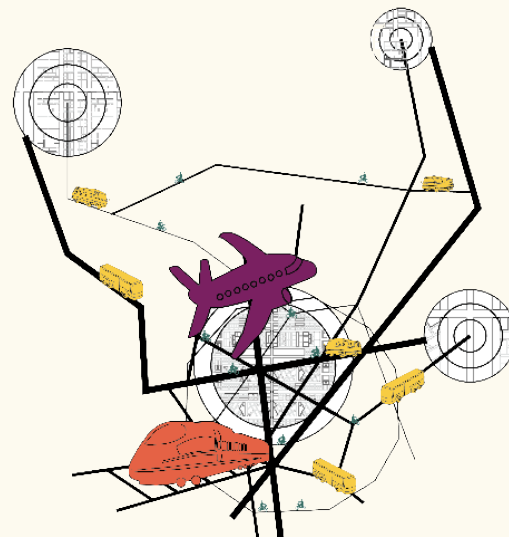
Many new city projects fail because they lack connections to the surrounding urban and peri-urban centers. Creating connections with the surrounding region via a road network and a reliable public transportation system is essential to the charter city's social and economic success (Storper et. al 2015). This responsibility lies in the developer's hands and should be one of the top priorities at the outset. Ultimately, facilitating regional accessibility—both inter-city and intra-city connections—allows for easy movement of people and goods, which generates more employment opportunities, reduces transaction costs, and lessens congestion (Button 2010).

In the early stages of city development, buses should run daily for transportation to and from the city, supported by reliable inter-city road infrastructure. The number of bus trips should be based on demand. Reliable road infrastructure will allow for economic linkages between the the new city and surrounding markets.



Regional accessibility at early stages.

In the later stages of city development, the city should explore more connection options. High-speed railways can be an excellent option for the easy transfer of goods and people to and from the city. Railways can become an affordable option for the city once it becomes more economically viable.



Regional accessibility at later stages.

Conclusion

A thriving charter city requires a maximally connected and mobile labor market, which in turn requires an effective transportation system. The following tables provide an overview of the Mobility Guidelines for a charter city.

Charter City Mobility Guidelines:

1. Accessible transport	<p>The city should ensure safer roads by:</p> <ul style="list-style-type: none"> —Developing safe and sustainable infrastructure for non-motorized travelers. —Setting and enforcing speed limits. —Avoiding urban highways and wide streets. <p>The city should ensure women safe access to transportation by:</p> <ul style="list-style-type: none"> —Hiring more women drivers and operators. —Fostering more women-owned and operated businesses —Improving street lighting. —Including women in the transportation policymaking process. <p>The city should try to minimize transportation expenses for city residents by:</p> <ul style="list-style-type: none"> —Prioritizing less capital-intensive forms of transit. —Implementing a more compact, mixed-use land use design. —Designing infrastructure that encourages walking or other non-motorized forms of transit. —Encouraging private modes of transit. <p>The city can support sustainable transportation by:</p> <ul style="list-style-type: none"> —Providing affordable and accessible public transport. —Encouraging the use of electric vehicles. —Using regulatory tools (e.g., market pricing for parking, a carbon tax, etc).
2. Minimizing the need for private car usage	<ul style="list-style-type: none"> —Most daily trips are walkable or cyclable —The necessary infrastructure to make walking and/or cycling. —Safe, reliable, and affordable public transportation is available.
3. Allowing for and encouraging non-motorized modes of transportation	<ul style="list-style-type: none"> —Providing safe and adequate infrastructure for cycling and walking, as well as designing safe connections and networks between neighborhoods. —Placing traffic signals at intersections when needed.

CONCLUSION



Charter cities and new city developments have the potential to spur urban economic vibrancy, both solving market failures and unlocking innovation and growth (Zheng & Tan, 2020). However, until a deliberate shift occurs in the planning processes of these new city developments, they will continue to suffer from a set of common challenges. With the number of new cities either in conception or under construction today easily in the thousands, there is an urgent need to overhaul the approach towards new city planning in order to avoid these common challenges. In short, new city planning must be rethought, transitioning away from top-down and comprehensively master planned projects to more organic, bottom-up processes—as has been the reality for most cities throughout history.

New cities should be conceptualized as emergent labor markets where people move for better economic opportunities and, in turn, for an improved quality of life for themselves and their families. The Planning Guidelines developed in this document aim to create functional, affordable, and sustainable growth. Importantly, these guidelines foster city structures that are responsive to all stakeholders involved, especially residents and businesses. Through this emphasis on responsiveness, planning that follows these guidelines will be much better equipped than cities developed under status quo planning frameworks to help solve the main challenges of new city making in the 21st century.

The Planning Guidelines developed in this document assume a charter cities framework that allows for decentralized, local control over governance and planning. By devolving powers to the city level, the city authorities can shift away from traditional planning paradigms towards a more growth- and human-centric approach. Such a shift also allows for increased experimentation, for innovation, and for the creation of governance and planning systems that genuinely respond to the city's evolving needs.

The Planning Guidelines went through three key parts in developing urban plans for new charter cities: (i) City Development Guidelines; (ii) Urban Planning Guidelines; and (iii) Mobility Guidelines. These three sets of guidelines should be used to shape the physical development of new charter cities. Informed by the paradigm of Guided Organic Growth, these documents can help create sustainable, affordable, and growth-oriented cities—cities in which tomorrow's urban dwellers can not only live but can thrive.

Annex 1

Planning Paradigms

Modernist functional planning is the set of ideas that originated from the Congrès internationaux d'architecture moderne (CIAM) conference, followed by influential modern architects and planners. This paradigm conceptualized planning on function-based zoning and advocated for large, open green spaces and high-rise housing blocks (Monclús et Díez Medina C. 2018). The Amsterdam South Extension Plan (1934) and Brasilia (1957) are both products of different intellectual traditions within the modernist functional planning paradigm. Rational-comprehensive planning appeared in the 1960s, using data and scientific analysis to build cities (Stuart 1969). Community- and place-based planning puts the community at the center of the planning process with the aim of changing public spaces into places that can promote community development, social cohesion, and health (Project for Public Spaces 2007).

Current New City Planning Paradigms

1. The Chinese grid system is a hyper-functional approach dominated by its matrix arrangement. It is the dominant approach used in Chinese-led new city projects (Curien 2014).

It consists of three main things:

- i. A very wide road system (50 to 60 meters wide).
- ii. Large square city blocks (autarkic block) that are typically a few hundred meters wide and are relatively closed off.
- iii. A separation of functions with every block representing a singular function.

2. An American suburb is a separate residential community within driving distance from the city. They are characterized by (Filion 2018):

- i. Single-family detached housing.
- ii. Strict zoning laws that often deny any other residential types.
- iii. Separation of residential and commercial functions.
- iv. Streets with strict hierarchy and cul-de-sacs.

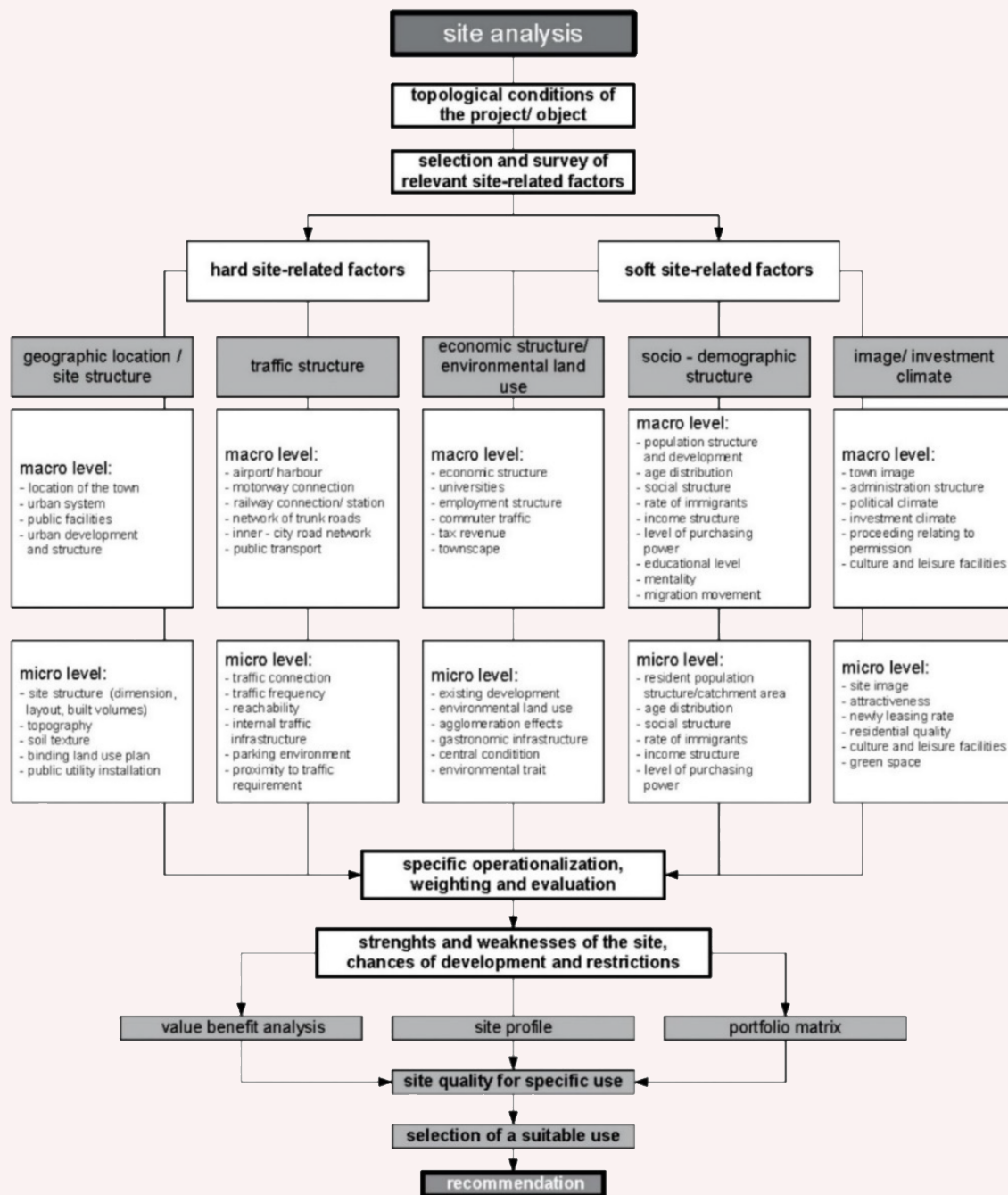
3. The Dubai/ Singapore model emulates or outright copies the architecture and aesthetics of Dubai or Singapore: tall glass buildings, wide streets, often designed and built by international architecture firms (Keeton & Nijhuis, 2019). This practice is so common that both Dubai and Singapore have firms that many new city developers hire to replicate the master plan, buildings, and various other factors of these two cities (Weizman, 2012).

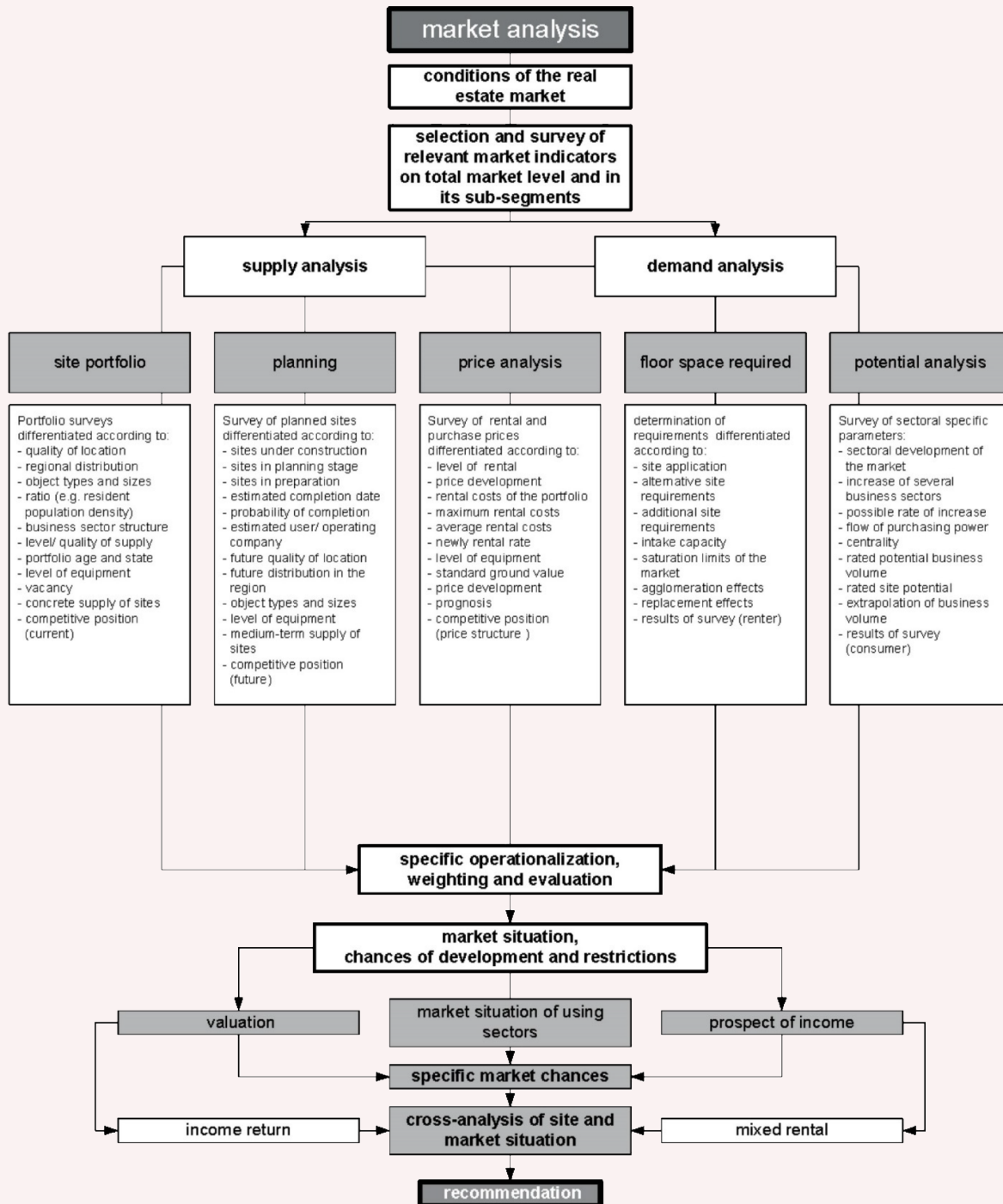
Annex 2

The Analysis Phase

The first steps of the planning process are analysis and research. First, a detailed market and site analysis is needed to guide project development. The analysis should be holistic, studying all aspects of the city to highlight the city's specificities. Site analysis should include both hard site-related factors and soft site-related factors. Hard-related factors include site structure and traffic/infrastructure connections. Soft-related elements include the host

countries relevant laws and regulations, socio-demographic characteristics, cultural practices, and rules around land tenure.s. In addition to hard and soft factors, an in-depth analysis should be done on economic feasibility and environmental impact. For more details on this initial analysis and research see the report by PricewaterhouseCooper that goes over these elements in-depth for new industrial parks and zones in sub-Saharan Africa (PWC 2018). The graphs below show the different aspects involved in both a site analysis and a market analysis, and how these analyses should guide recommendations.





The Concept Phase

The Concept Phase includes the objectives, strategic framework, development plan, and definition of measurements. The concept should be linked to the outcomes and recommendations of the site and market analysis. While all charter cities aim to lift people out of poverty, each city will have different potential markets and site specifications, based on its unique local context. These unique idiosyncrasies must be taken into account when developing concept documents.

Annex 3

Organic Grid

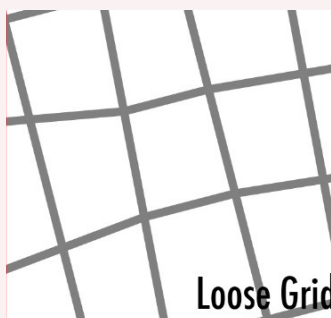
Organic streets often start and end seemingly at random, and can oftentimes zig-zag back and forth. While to the naked eye organic streets can seem to come from unorganized development it is often not random at all, organic grids are sensitive and grew with every building and parcel. An organic grid emerges and develops over time in response to a burgeoning city's incremental growth. These organic street patterns can be found in old English towns, medieval medinas in North Africa, and in many towns of Continental Europe—in essence, in any cities that emerged before modern urban planning (Kostof 2021).



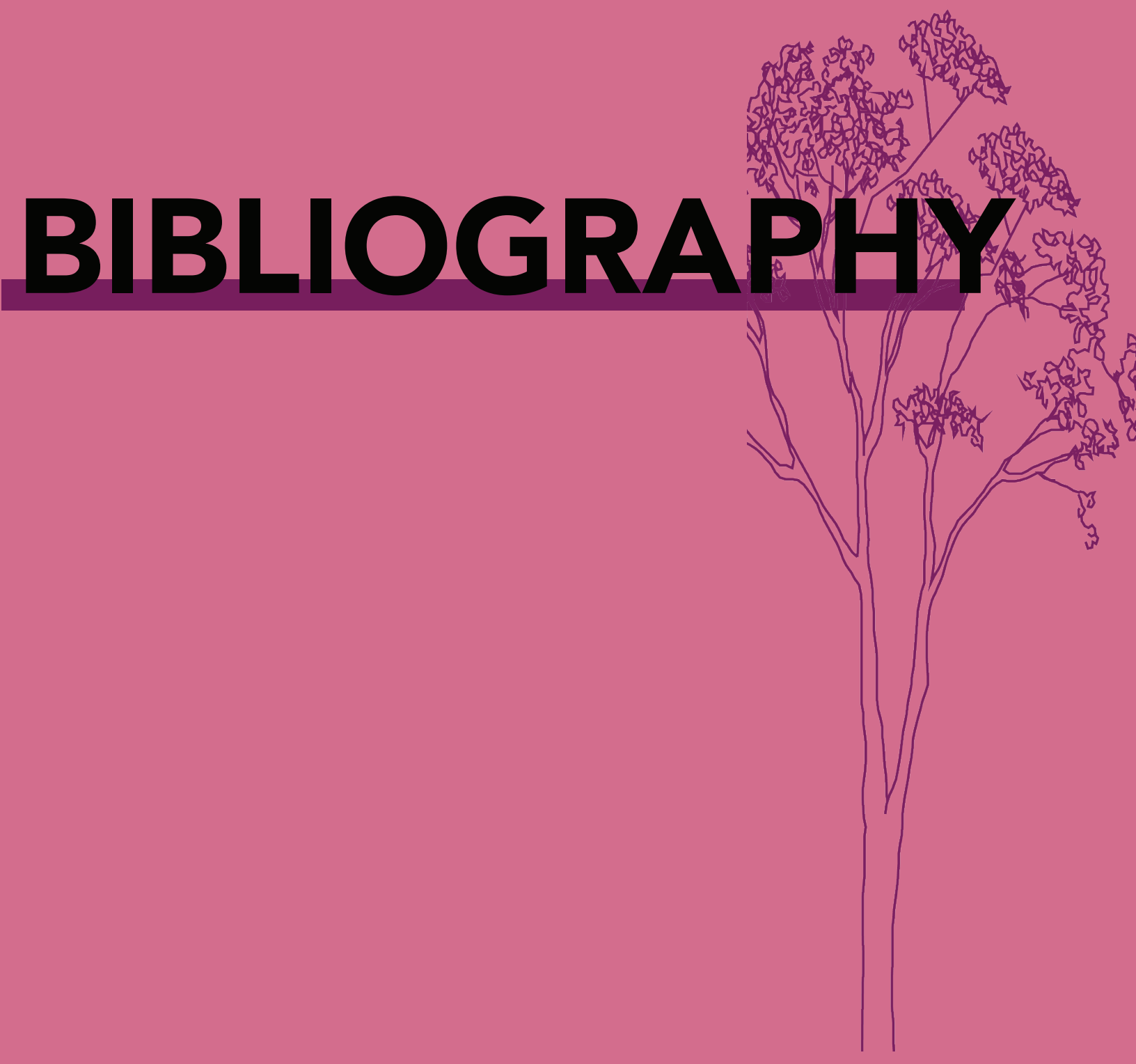
Organic Grid Patterns (Munson 2021)

Loose Grid

The loose grid is a grid that arises from four-way street intersections. A lot of the cities start off as a strict gridiron and and evolve into more organic patterns. Loose grids are very popular in Global South cities; often planned as a gridiron in the beginning, they evolved into loose grids as informality and different housing alternatives took over the city (Munson 2021).



Loose Grid Patterns (Munson 2021)



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