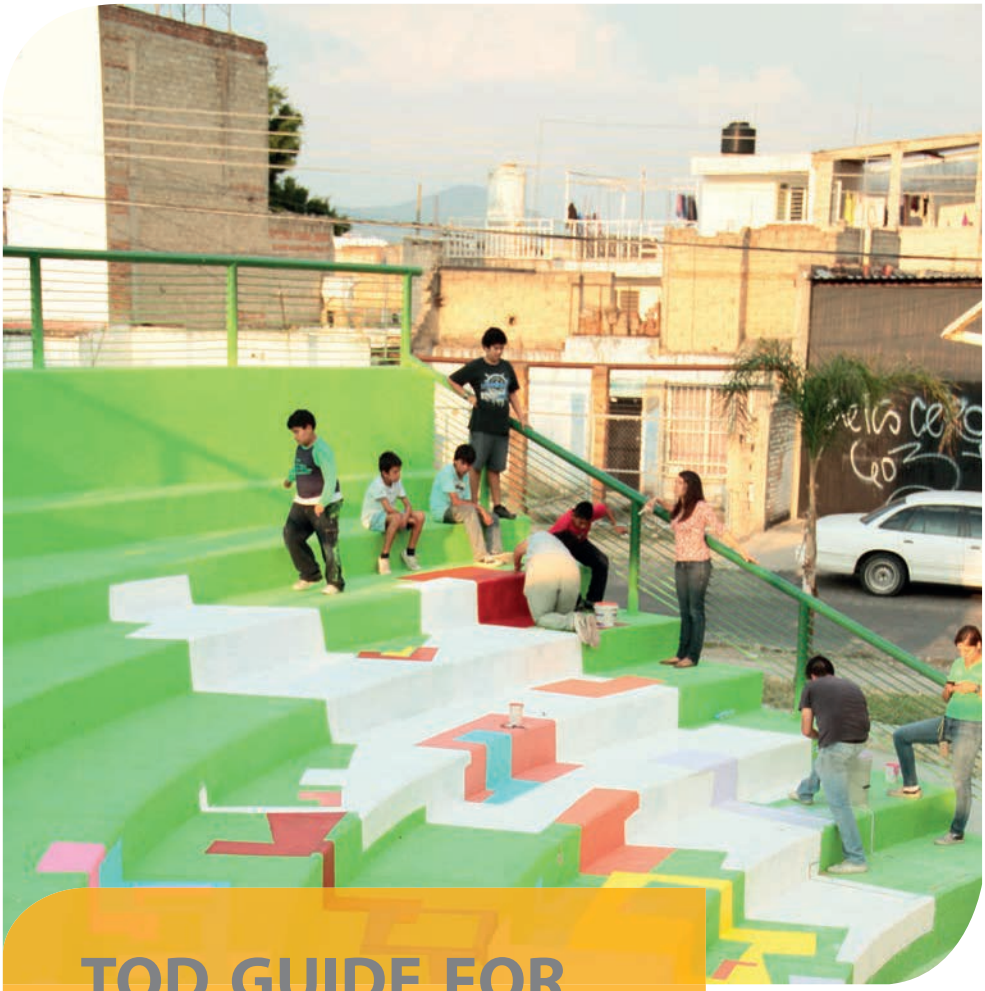

TOD GUIDE FOR URBAN COMMUNITIES

EMBARQ®

FORWARD

The world is urbanizing and motorizing at an unprecedented speed. Between now and 2030, the world's cities are expected to add 1.5 billion people– and build more urban area than has been created in humanity's entire history. However, most developments around the world have taken place in an unsustainable manner, with priorities given to cars than public transit or pedestrian connections. This development pattern often results in unsustainable neighborhoods with large urban blocks, and poor pedestrian and biking environments. Private motorization is growing rapidly, with 1 billion cars expected to be added between now and 2030. This soaring number of cars exacerbates the problems that cities are facing today such as traffic congestion and air pollution.

Transit oriented development (TOD), which promotes dense, mix-used urban development with good walking and biking connections around transit stations, is a useful and important concept for urbanizing regions and cities. This TOD Guide for Urban Communities shares the best practice guidelines in transit oriented development around the world. This publication summarizes 28 concrete design recommendations for transit oriented development. It also identifies seven steps that developers and authorities should follow in transit oriented development. The target audiences are real estate developers, public sector decision makers, researchers, and citizens searching for quality-of-life improvement.

The document was originally written by EMBARQ Mexico, with the aim of providing TOD design criteria and recommendations for urban projects in Mexico. However, through the knowledge and practices of EMBARQ network, we found the urban challenges cities are facing today are extremely similar; and solutions like TOD are applicable to cities all around the world.

We hope you find this publication useful. We also hope the knowledge contained in this report can be transferred to on-the-ground practices and help catalyze sustainable changes in urban development around the world.

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Index

PRESENTATION

The primary objective of the EMBARQ Network is to act as a catalyst for sustainable mobility solutions, and to improve the quality of life in cities through the promotion of comprehensive innovation and development strategies. During the past few years, the Centro de Transporte Sustentable de México A.C.-EMBARQ MEXICO Center has incorporated sustainable urban development criteria to its practice; and in 2010, it published the Sustainable Transit-Oriented Development (in Spanish – Desarollo Orientado al Transporte Sustentable, DOTS®). This manual introduces the "Transit-Oriented Development" concept to the Mexican context, and adapts it to the reality in which the country's urban communities are being built with a significant lack of holistic criteria, in an isolated manner, and with no contribution to the development of connected, competitive, efficient, and safe cities.

However, Mexico is on the verge of an urban transformation that requires greater sustainability standards, and whose citizens demand a better quality of life. This need is evidenced by the success with which DOTS® has entered the public and private Mexican urban development spheres. CTS EMBARQ Mexico has worked as a consultant to both municipal governments and domestic private real-estate developers, with the goal of incorporating DOTS® into the design of sustainable communities.

The DOTS® Guide for Sustainable Urban Communities describes 28 concrete urban design recommendations - simple to understand, implement and promote - based on both international sustainable development standards, as well as on the 7 DOTS® components. The recommendations are structured around the construction and renewal of urban development. Its primary objective is to establish common design criteria among the various players responsible for the building of sustainable urban communities, so it is primarily intended for public sector decision-makers, real-estate developers, and citizens searching for quality-of-life improvements in their urban environments.

The guide also identifies seven steps or stages, which should be followed by the real-estate developer or competent local authority during the application of DOTS criteria: from the diagnosis phase to the periodic assessment of the applied measures.

This DOTS® Guide for Sustainable Communities was drafted with the support of the British Embassy in Mexico through the Prosperity Fund, and within the framework of the project for "Constructing Resilient and Competitive Cities". It is also part of the DOTS® Kit, a set of tools that captures the work experiences from CTS EMBARQ Mexico and its multiple efforts towards the building of sustainable, low-emission communities in Mexico.


CAFÉ Y RESTAURANT
COCINA ITALIANA
EL CHORRO

The DOTS® Kit is a family of tools meant to adapt, implement, and disseminate the Sustainable Transit-Oriented Development model, the DOTS® model, to the Mexican urban development context. Starting in 2009 with the publication of the DOTS® Manual, the Kit's tools cover theoretical research, conceptual frameworks, creation of indicators, GIS analysis, design guides, organization and development of multi-disciplinary workshops, recreational tools, and methodologies for experts.

The experience CTS-EMBARQ Mexico has gained in the past four years from the implementation of DOTS® is reflected in the dissemination of 1,000 manuals and the provision of approximately 30 workshops to more than 100 municipalities, government officials, private developers, academics. Throughout this period, the DOTS® model has enjoyed the support of strategic partners, such as The British Embassy in Mexico, The Prince's Foundation for the Built Environment, Bloomberg Philanthropies, William and Flora Hewlett Foundation, World Bank, Inter-American Development Bank, UN-Habitat, INFONAVIT, SEDESOL, SEMARNAT, Gehl Architects, Alta Planning, Mario Molina Center, UNAM, Casas GEO, and Grupo Promotora Residential, among others.

CHALLENGES AND OPPORTUNITIES IN MEXICAN URBAN DEVELOPMENT

01

80% of Mexicans live in cities. The Mexican economy of the future will depend increasingly on its cities, which are the roads to economic, cultural, technological and social connections with the rest of the planet. To invest in them is to directly invest in the country's prosperity, and in the quality of life of 90 million Mexicans.

However, the land-use pattern followed by Mexican cities severely undermines the attainment of the country's large-scale objectives. Our cities are growing according to a 3D land use model – Distant, Disperse and Disconnected. It is characterized by sprawling, fragmented and unplanned growth of the urban footprint. A land use model of this type is highly counter productive, creates more inequality, and generates more pollution and greenhouse gas emissions.

Challenges at a national level

The 3D urban model is highly unproductive, as it increases community distance, time and cost to the city centers. In Mexico City alone, 3.3 million man-hours are lost due to traffic congestion. These man-hours translate into a loss of 33 billion pesos per year, which is equivalent to the UNAM's (Autonomous National University of Mexico) annual budget. This situation is replicated in the country's other cities, which have experienced a sustained increase in their congestion levels. These levels will be exacerbated with the growth of vehicle ownership, which is estimated to reach 70 million units in 2030. On the other hand, this sprawling and fragmented growth pattern makes Mexican cities inefficient to supply, equip and manage. Under the 3D model, it becomes costly to provide services, such as electricity, water, sewage, garbage collection, cleaning, maintenance, and policing of streets and public spaces. This is one of the reasons driving 70% of the country's municipalities into bankruptcy[1].

The 3D model promotes inequality, as lower-income sectors become segregated and condemned to living in peripheral neighborhoods with poor services and worse equipped to thrive as they are far from employment sources and social networks. Currently, two out of three low-income Mexicans live in a city. This number has steadily increased in the past five years. The increase in transportation distances to the city centers has resulted in many families spending up to 25% of their income on transportation. This has been a great contributing factor to the fact that there are 5 million uninhabited residences in Mexico[2] – the majority of them are low-income housing. These residences are enough to house the 20 million people who inhabit the Metropolitan Area of the Valley of Mexico. The loss of social protection links, which explains much of the increase in urban poverty since 2008[3], is a direct consequence of the dispersed growth pattern in the cities. This type of growth makes it more difficult to access quality basic social services, and separates low-income families from their social and economic networks.

The 3D model is, in essence, polluting it uses energy and natural resources intensively, which contributes to the fact that cities are responsible for 70% of greenhouse gas emissions.[4] The sprawling and fragmented land use model also makes it more difficult to introduce efficient public transit systems, walking and bicycling. It also promotes the mass use of personal vehicles (which in turn, generate traffic congestion). This is a major topic that must be addressed when national climate change policies are created, as transportation represents the second largest source of greenhouse gas emissions (20.4% of the total).[5]

However, Mexico has started to implement policies that recognize the importance of cities, and how they use available land. The recent creation of the Ministry of Agricultural Land and Urban Development (SEDATU) is a good start. It unifies and empowers previously fragmented programs and bodies at the national level. It must be noted that there are economic incentive programs for the promotion and creation of more compact and better equipped urban spaces, such as INFONAVIT's Sustainable Housing Program, the Sustainable Comprehensive Urban Developments (DUIS) of the SHF, and the operating rules for housing subsidies by CONAVI, who reward the construction of residential developments in consolidated urban areas.

1 National Institute for Federalism and Municipal Development (2012).

2 INEGI, Population and Residential Census, 2010.

3 World Bank, Mexico (2012). Mexican Reforms Agenda for an Inclusive and Sustainable Growth.

4 UN - Habitat (2011). Cities and Climate Change. Global Report on Urban Settlements.

5 SEMARNAT – INE (2010). Greenhouse-gas Emissions Inventory.

Opportunities at a local level

Despite being well underway, these initiatives still lack a global vision of the problem and the urban development model to be followed. To counter this, Sustainable Transportation-Oriented Development (DOTS®) has as its objective to reverse the tendencies created by the 3D model. The DOTS® model bets on low-carbon growth, favoring compact development, bringing people closer to their destinations and primary activities, promoting sustainable mobility, and decreasing the distances and durations of daily commutes. The DOTS® model is oriented towards the creation of sustainable urban communities, where the land, its uses, and the infrastructure and services networks are planned comprehensively. This is done to create more accessibility to economic and social growth, to improve the population's quality of life, and to protect the environment. A sustainable urban community fashions its growth through integrated infrastructure and transportation system networks, which efficiently connect the city with the remainder of the territory and its center through DOTS® neighborhoods. These neighborhoods are open, inclusive, complete, and favor the movement of people over that of vehicles through well-equipped, kind and safe streets.

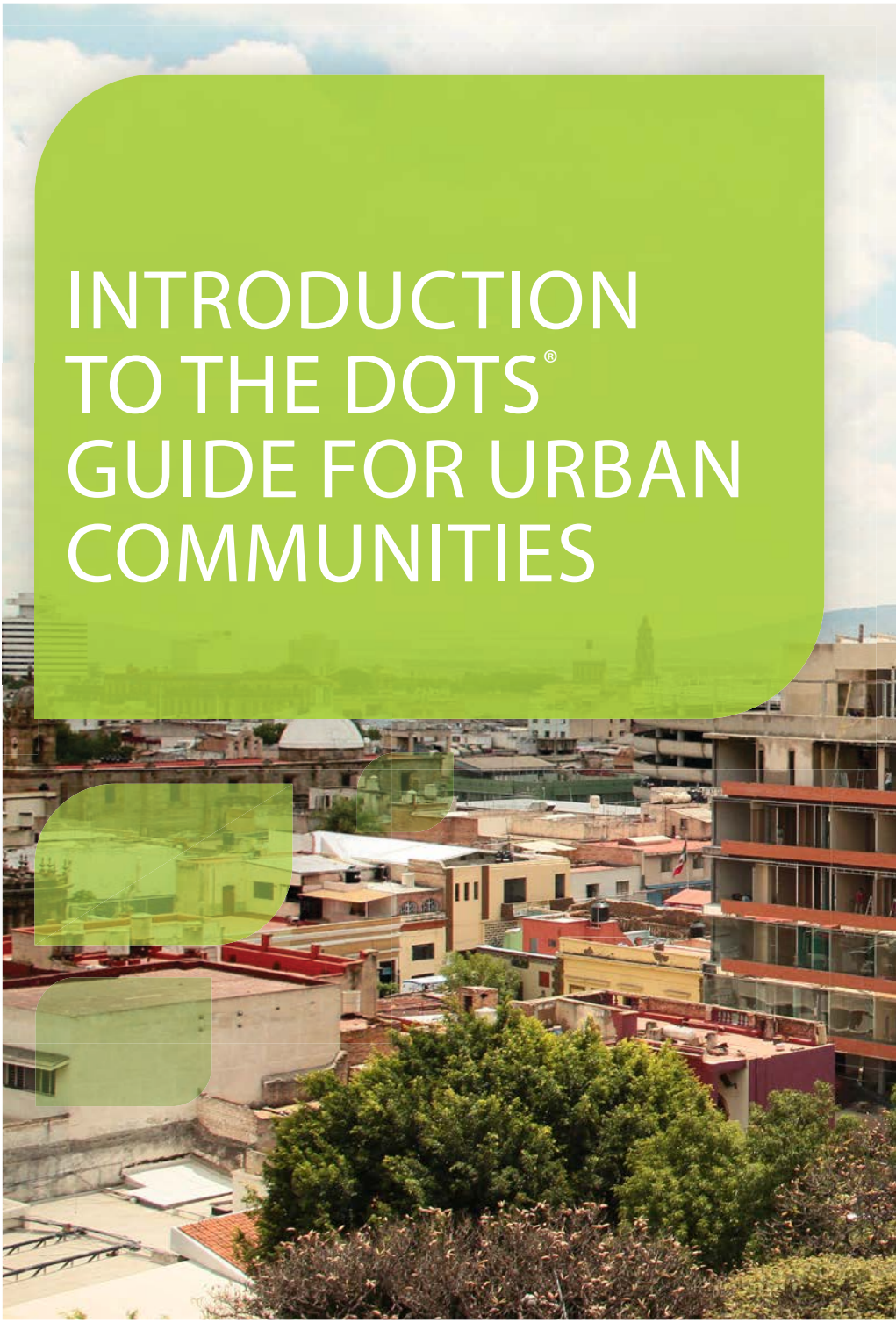
The DOTS® model goes hand-in-hand with recent global trends, in both, the public and private sectors, of transforming the current urban planning and design patterns. The shift of design models and location of new urban communities in Mexico, along with a comprehensive understanding of the current urban problems, and their promotion at the federal level of public policy for the appropriate use of land, may contribute to a significant paradigm shift in the country's urban development.

The DOTS® Guide for Urban Communities is part of this shift, as it proposes a comprehensive urban design strategy for residential and mixed developments, and urban renewal. The application and replication of urban design strategies outlined by this Guide may change the way Mexican cities are built, in the same fashion that DOTS® has started to change the way we think about the country's urban development. Therefore, the Guide is based on the practical implementation of the seven components of a DOTS® neighborhood:

1. High-quality public transit
2. Non-motorized mobility
3. Management of vehicles and parking
4. Mixed-use of space
5. Active ground floors ans street fronts
6. Active and safe public spaces
7. Community involvement and safety

It is possible to make our cities highly competitive, resilient, fair, safe and kind. Through the DOTS® model, Mexico has a great opportunity to elevate its cities to a level of sustainable urban development that meets global standards. National urban development can achieve its expectations for economic growth, comply with its environmental commitments, and significantly increase the quality of life of its population. However, to achieve this, it must stop thinking of cities as a problem, and instead, think of them as the solution.

INTRODUCTION TO THE DOTS® GUIDE FOR URBAN COMMUNITIES




02

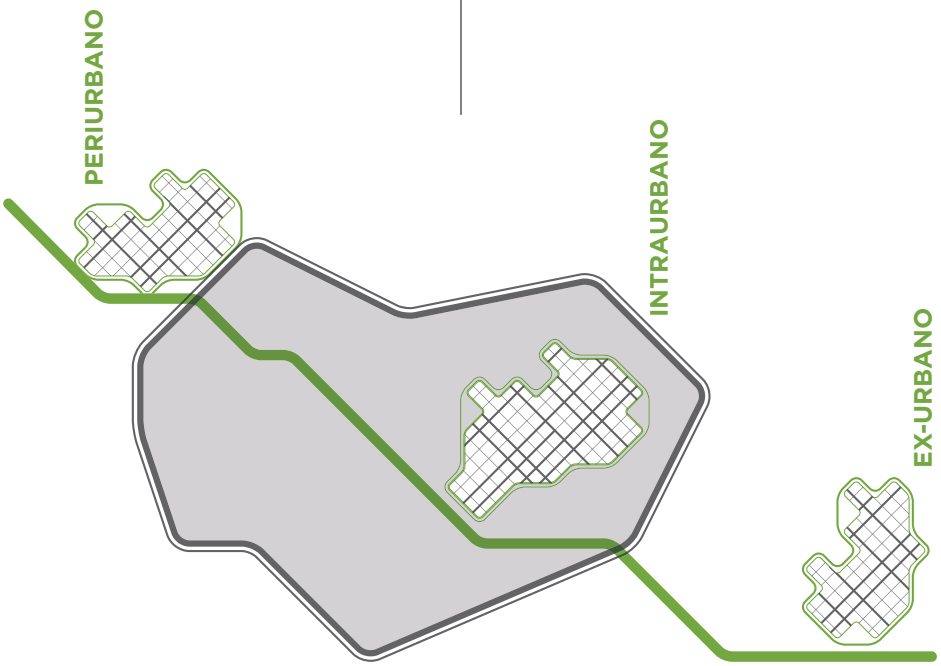
2.1 Purpose

The DOTS® Guide for Urban Communities is a tool whose purpose is to aid in the building of SUSTAINABLE URBAN COMMUNITIES. These are understood to be urban developments that offer a complete urban life (with appropriate access to the city, high-quality housing, safe and kind mobility, plentiful nearby amenities, low carbon footprint, social integration, generation of work and culture) and regardless of size, contribute to the building of a city that is connected, competitive, efficient, safe, and with a common vision towards sustainable urban development.

2.2 Application

The DOTS® Guide for Urban Communities has taken into account newly created urban communities, as well as the renewal of existing ones. In both cases, it is important to highlight the significance of the role played by the location of the development with respect to its primary urban footprint, as the majority of DOTS® urban design strategies described by this Guide are meant for inner-city or peri-urban (also called suburban or peripheral communities). However, the efficiency and viability of the application of these strategies is significantly reduced when they are applied to non-urban developments (also called ex-urban). The following definitions must be followed to identify the type of urban community where the work is being done, as it relates to its location:

- Inner-city community: Surrounded by the existing urban footprint. At least 75% of the land surrounding its perimeter has been previously urbanized and completely occupied.
- Peri-urban community: Adjacent to the existing urban footprint. At least 25% of the land surrounding its perimeter has been previously urbanized and is mostly occupied.
- Ex-urban community: Isolated from the existing urban footprint. At least 75% of the land surrounding its perimeter is not occupied or not urbanized (SEE 3.3 PROXIMITY TO THE URBAN FOOTPRINT).



2.3 Structure

The DOTS® Guide for Urban Communities describes concrete urban design recommendations, criteria and strategies in CHAPTER 3, DOTS® Urban Design Strategies for urban communities. It also proposes a methodology for its implementation within the context and reality of planning, design, construction and operation of urban developments in Mexico. They are succinctly described in CHAPTER 4 Stages for the implementation of a Sustainable Urban Community.

Both chapters were developed taking into account global design standards from BREEAM Communities, One Planet and, LEED ND as well as more recent Mexican efforts related to this subject: federal programs for Comprehensive and Sustainable Urban Developments (DUIS), and INFONAVIT's Complete Life, Sustainable Housing. A summary of the criteria used for this Guide can be found in the APPENDICES, where two more important reference sources are added: project assessment indicators from the DOTS® Manual, useful for measuring the impact of strategies outlined by this Guide and the work logs of CTS EMBARQ Mexico's experiences in the application of some of these residential development strategies.

2.4 Terminology

The DOTS® Guide for Urban Communities provides the reader with a list of frequently used abbreviations, as well as a glossary. Together, they specify the scope, intention and sources of reference for the urban concepts. This is particularly true for the content of CHAPTERS 3 and 4.

On the other hand, and to better understand this Guide, the seven DOTS® components have been adapted from their original form to the following:

1. High-quality public transit > Quality public transit
2. Non-motorized mobility > Non-motorized mobility
3. Management of vehicles and parking > Management of automobile use
4. Mixed-use of space > Mixed-use and efficient buildings
5. Active ground floors and street fronts > Neighborhood centers and active ground-floors
6. Active and safe public spaces > Public spaces and natural resources
7. Community involvement and safety > Community involvement and identity

It is also recommended that the reader consult the documents and bibliography referenced for the drafting of this document. This could aid the reader gain a deeper understanding of complementary subjects, theoretical specifications and design.

THE SEVEN DOTS® COMPONENTS

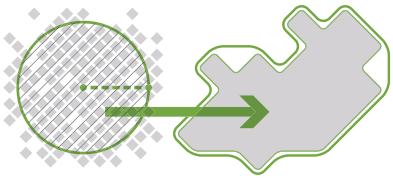
2.5 Implementation scales

The DOTS® Guide for Urban Communities is focused on the building of DOTS® neighborhoods. Using the neighborhood scale as a base, the strategies contained in the Guide have as their objective to act locally, without losing sight of the urban and regional contexts. Therefore, each of the seven DOTS® components translates into strategies, which while not directly or indirectly based on the neighborhood scale, correspond to its relationship with the following action scales:

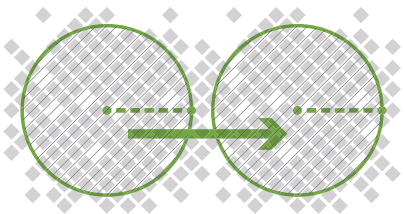
1) Urban scale

A sustainable urban community is linked to the existing city structure and services, and has a strong relationship with its urban footprint. At this scale, recommendations are made focused on complementary links - physical, as well as political, economical, environmental, and social – between the urban community and the remainder of the city or metropolitan area.

2) Inter-neighborhood scale



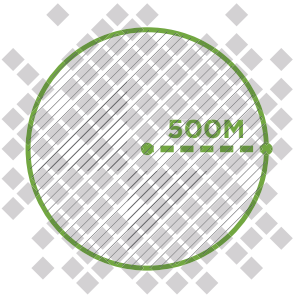
Each neighborhood within a sustainable urban community must acknowledge its relationship with other neighborhoods, and specifically, with their neighborhood centers. The way in which neighborhoods interconnect, through the creation of economic, social, environmental and mobility networks, creates a set of neighborhoods that function in a complementary fashion and within a larger scale.



3) Neighborhood scale

Each sustainable urban community functions with DOTS® neighborhoods as its base. These neighborhoods are defined, for this Guide, as the area encompassed by a 600 meter pedestrian and cycling radius (which corresponds to a 10-minute walk). To establish the intervention area, the NEIGHBORHOOD CENTER or the public transit station should be considered as the start of the pedestrian and cycling radius.

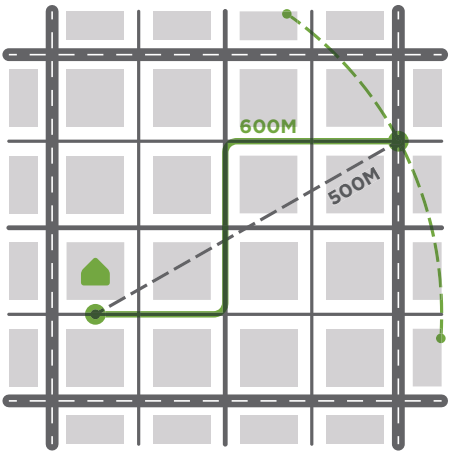
4) Road scale



The street is the space where different aspects of daily life interconnect in a sustainable urban community. In addition to being part of the mobility network, all streets must host multiple uses and activities: spaces for exchanges that are cultural, political, social, recreational, and asset-related. The street is also the first access point to public and private transit, and the primary access point to information regarding the city.

2.6 Linear and trajectory distances

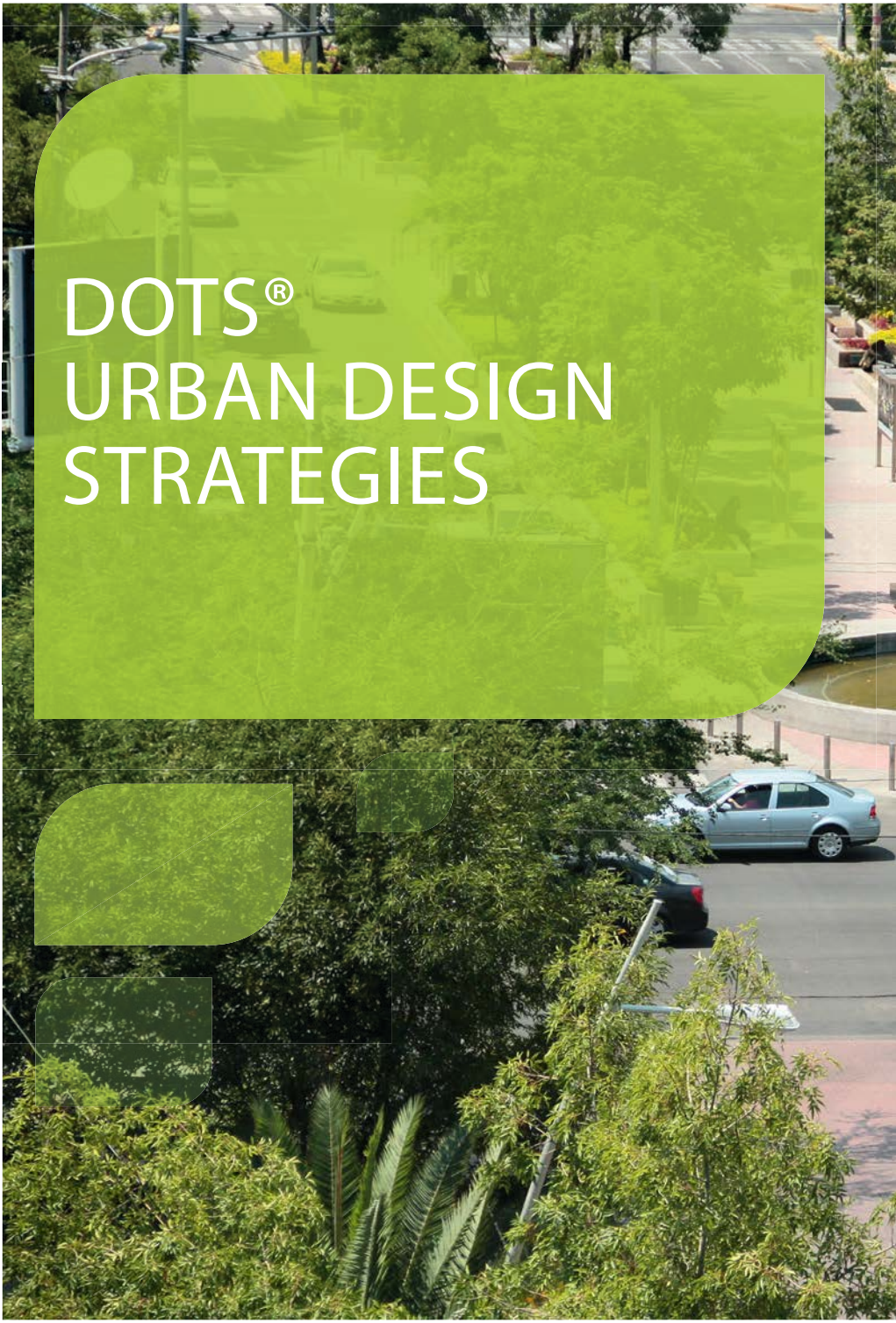
The DOTS® Guide for Urban Communities resorts to, in many of its strategies, to the measuring of the distances traveled by cyclists or pedestrians. This is particularly true for trips originating from any residence in the community to amenities, neighborhood centers and other points of interest. Since this measurement and analysis process of all potential trajectories from one point in the neighborhood to another can be exhausting, the reader may consider translating those trajectories into linear distances. It could be assumed that the cycling or pedestrian trajectory distance is equivalent to 1.2 times the linear distance between the two points considered, as long as the area in question has adequate infrastructure for non-motorized mobility, and as long as its roads are well connected (SEE 3.2 INTERNAL CONNECTIVITY, SIDEWALKS AND BIKE PATHS).



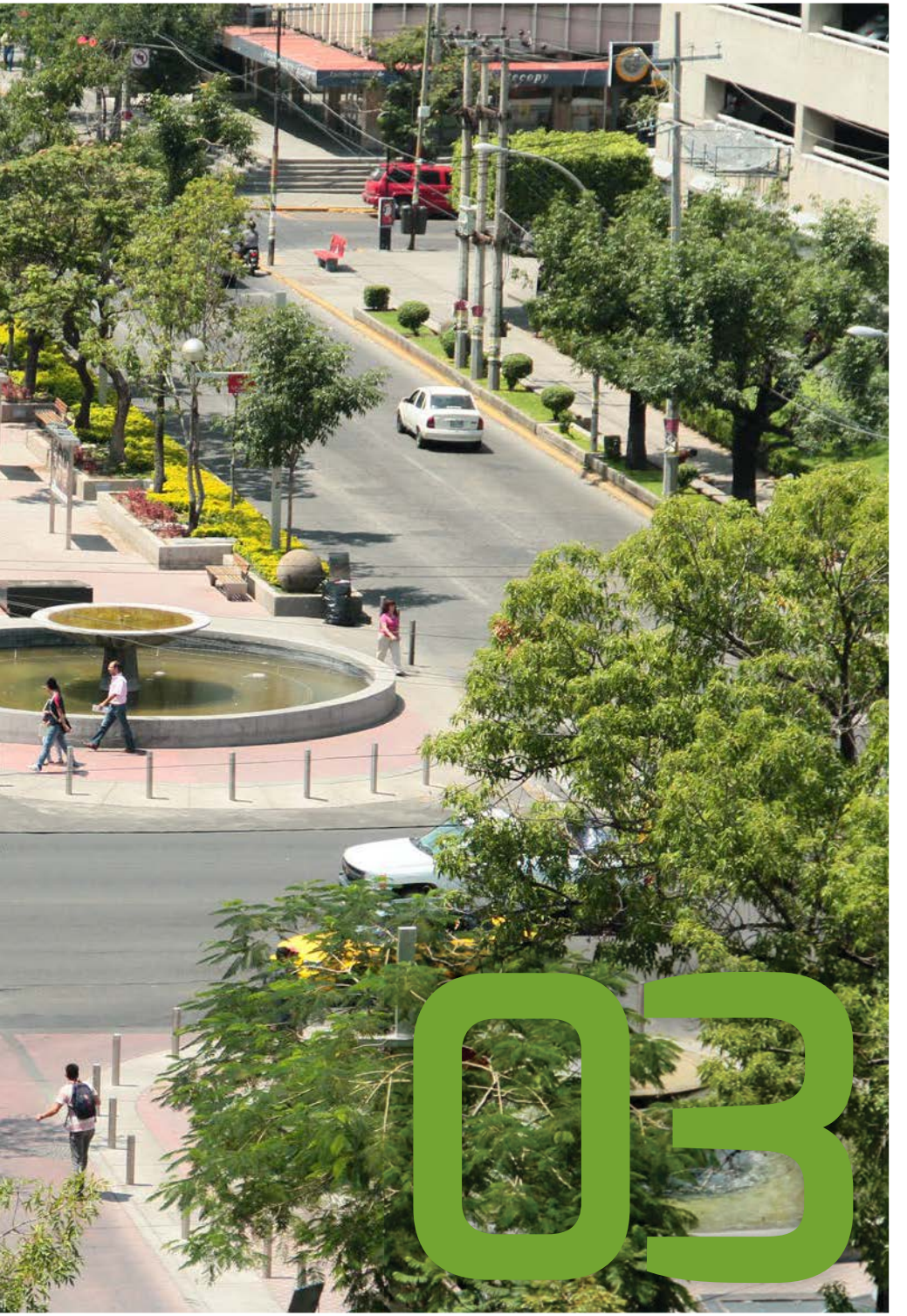
2.7 Comprehensiveness

The DOTS® Guide for Urban Communities should be considered a tool that allows for the translation of the seven DOTS® components into urban design strategies. Just as these components are part of a comprehensive urban development vision, it is important to remember that the design strategies in this Guide should not be applied in an isolated or selective fashion. To this end, the guide attempts to explain the most obvious links among strategies through the sub-chapter number and the strategy title (SEE 3.3 ROAD SAFETY).

Despite the voluntary nature of the application of these urban design strategies, and of the specific recommendations contained in each of them, decision-makers and other players responsible for the building of sustainable urban communities are encouraged to aim for compliance with the totality of the strategies. This is done with the understanding that compliance with only one urban design strategy does not result in the building of a truly sustainable urban community, and that the strategies are not mutually exclusive. Application of the largest possible number of recommendations is suggested to achieve the highest sustainability potential.



DOTS® URBAN DESIGN STRATEGIES



03

The following outlines the primary DOTS® urban design strategies to be applied to achieve a sustainable urban community. To better understand them, the chapter is subdivided into seven sub-chapters that correspond to each of the DOTS® components. Also, each sub-chapter starts with a conceptual description of the subjects it covers, followed by an explanation of the problems it attempts to solve, and lastly, outlines four urban design strategies supported by representative diagrams and images that display the results expected for the Mexican context.

3.1 Quality public transit

- Proximity to the urban footprint
- Viability of public transit
- Access to public transit
- Public transit infrastructure

3.2 Non-motorized mobility

- Continuity of the road layout
- Pedestrian and cycling networks
- Internal connectivity
- Sidewalks and bike paths

3.3 Vehicle demand management

- Optimization of daily commutes
- Safe and orderly roads
- Parking management
- Road safety

3.4 Mixed-use and efficient buildings

- Regional facilities
- Neighborhood facilities and retail
- Efficient buildings
- Pedestrian-street interaction

3.5 Neighborhood centers and active ground-floors

- Local economy
- Neighborhood centers
- Active ground-floors
- Public-private transition

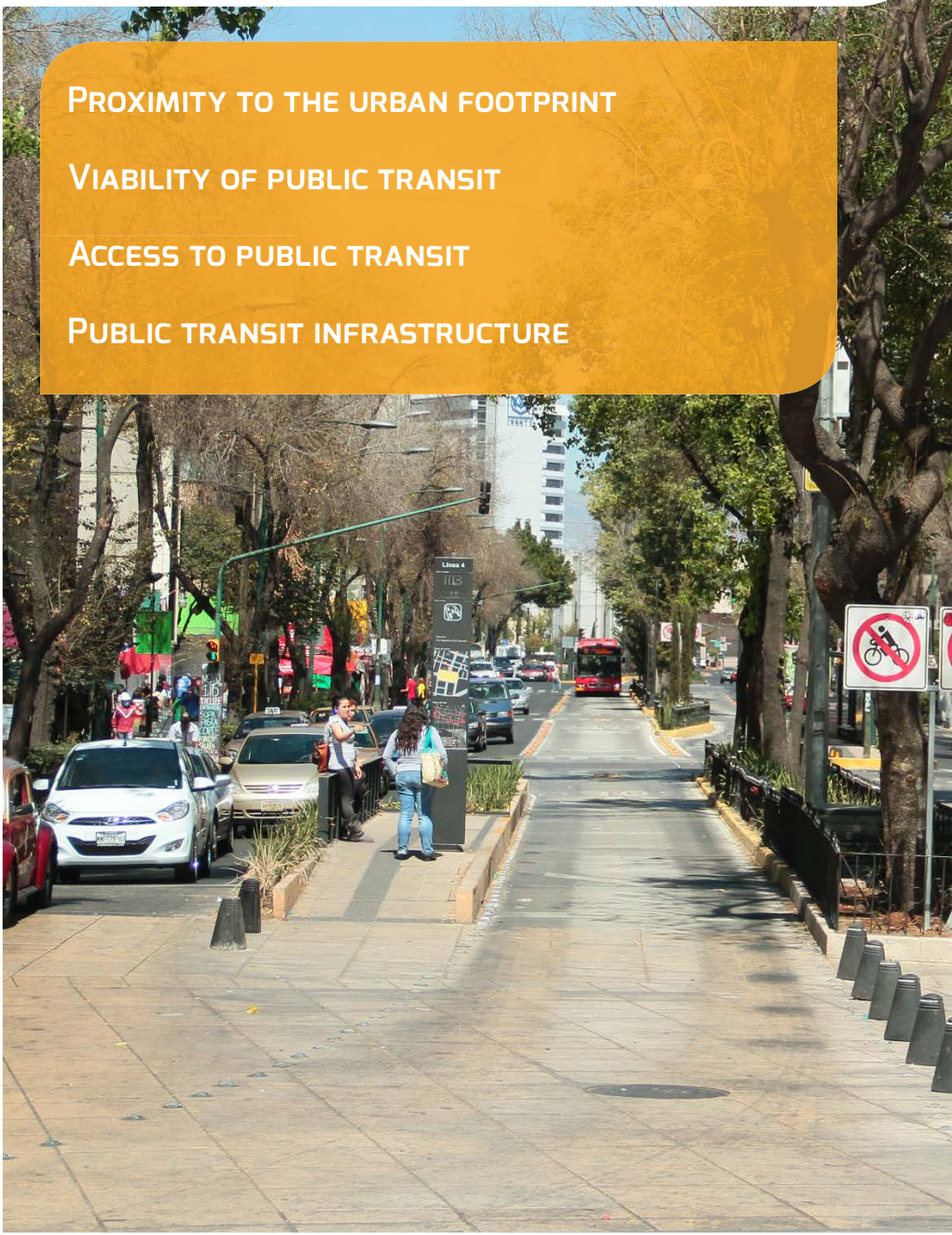
3.6 Public spaces and natural resources

- Strategic green areas
- Energy, water and waste efficiency
- Public space networks
- Public life

3.7 Community involvement and identity

- Citizen relationships
- Place identity
- Community management
- Sharing the street

3.1
Quality public transit



- Proximity to the urban footprint
- Viability of public transit
- Access to public transit
- Public transit infrastructure


CARRIL EXCLUSIVO
METROBUS
Por una ciudad más verde
L4
535
Por una ciudad más verde
VOLVO

The objective of offering high-quality public transit is to increase the number of regional public transit trips, through adequate connectivity, and a service that is comfortable, efficient, and accessible. Public transit is inherently linked to urban development. The viability of transportation systems relies on densely-populated neighborhoods, which allow for more convenient trips between the origin and destination within the city. The strategies recommended by this guide do not describe how to implement a quality public transit service, but instead, how to design the urban conditions that make it possible to create and operate it.

To offer quality public transit is to ensure the residents that they can move within and outside of their urban community in a way that is comfortable, efficient, and affordable, without the need for automobile use. A quality public transit implies high-frequency service, clearly established schedules, and an infrastructure that is appropriate for its operation. Quality public transit is also an important catalyst for the economic interactions of the built environment (diversity of land use, appropriate densities, retail corridors, added value), which multiply the incentives for the use of public transit.

Communities distant from the urban foot print that do not make a city

Low densities that make public transit inaccessible and not viable

Difficult access and trajectory to urban destinations

Lack of planning in the organization and infrastructure of public transit

According to SEDESOL, urban footprints in Mexico have increased seven-fold in the past 30 years, while the urban population has only doubled.[1]. This situation is explained by two factors: on the one hand, urban developments tend to be built on land that is far away and disconnected from the urban footprint, and on the other hand, Mexican residential building patterns are very low density. As an immediate consequence, the cost of urban infrastructure increases dramatically. Also, new low-income residence buyers lack access to quality public transit to travel to their community's economic centers and to the rest of the city.

When public transit service exists under these low-density and long-distance conditions, it lacks the minimum quality and accessibility requirements: there is no (or very little) maintenance by the service provider; the routes, fees and schedules tend to be irregular; the stops tend to be spread-out and disconnected from urban amenities and points of interest; and public transit infrastructure is not well-designed, and is rudimentary or non-existent, which frequently leads to inefficient service and accidents.

There are opportunities to both better locate urban community projects and to provide them with quality public transit. Currently, within the limits of Mexican cities of more than 50,000 residents, there are 85,000 hectares of urban land available[2]. In addition, when promoting compact urban projects and efficient transport services, maintenance costs and public expenses can be reduced by up to 42%[3].

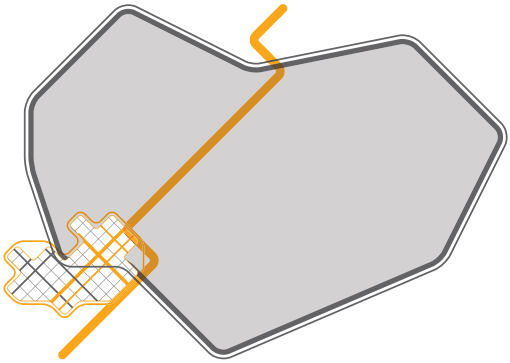
1 SEDESOL, La expansión de las ciudades 1980-2010, 2011, Mexico.

2 SEDESOL, Inventario de Tierra, 2012, Mexico.

3 CTS México, Hacia Ciudades Competitivas Bajas en Carbono C2C2, Reporte Final, 2009, Mexico, p.153.

URBAN STRATEGY:
Proximity to the urban footprint

To increase the probability of access to quality public transit in urban communities, it must be ensured that the project is part of a connected-city model. In other words, access to the urban community does not depend exclusively on regional roads. In this manner, public transit can connect the urban community with the rest of the city, without being dependent on the use of automobiles or of high-speed roads (e.g. federal and state roads). These roads are typically not viable for mass public transit, and they create urban barriers that are difficult to cross, both physically and socially.

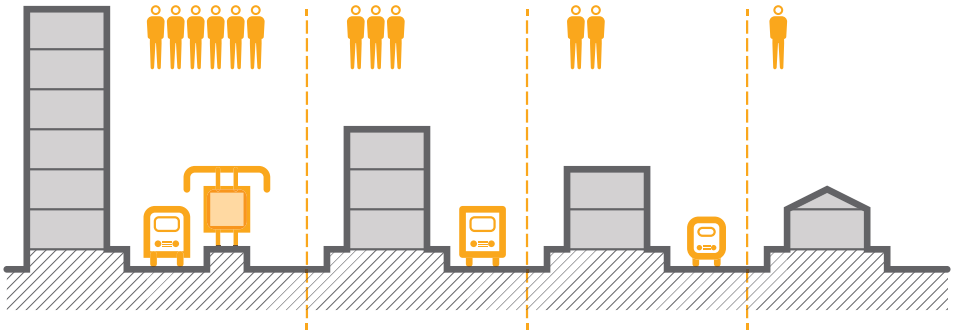


The sustainable urban community must be part of an open road network, where roads are easily integrated into the existing urban structure. To achieve this, it is recommended that the majority of the accesses to the sustainable urban community be through secondary or local roads, and that they connect with roads that have frequent quality public transit services.

INTER-NEIGHBORHOOD STRATEGY: VIABILITY OF PUBLIC TRANSIT

To make quality public transit viable, it must be ensured that the project creates a minimum potential demand with proximity to public transit, giving priority to populations without automobiles. To increase the probability of good quality public transit and an adequate service capacity, high or medium urban densities must be achieved, as seen in the following table[1]:

GROSS DENSITY	PUBLIC TRANSIT SERVICE	QUALITY
VERY LOW (6-25 homes/ha)	Transit with average capacity of 12 passengers, with low frequency. Shared vehicles, micro-buses.	LOW ↓ HIGH
LOW (15-45 homes/ha)	Transit with capacity of up to 35 passengers, with low frequency. Vans, mini-buses.	
MEDIUM (40-55 homes/ha)	Transit with capacity of up to 85 passengers, with regular frequency. Non-articulated buses	
HIGH (60-85 homes/ha)	Transit with average capacity of 100 - 220 passengers, with medium or high frequency, depending on capacity. Articulated buses, bi-articulated buses.	
VERY HIGH (>90 homes/ha)	Transit with capacity of over 1,000 passengers, with high frequency. Commuter train, light rail, subway.	

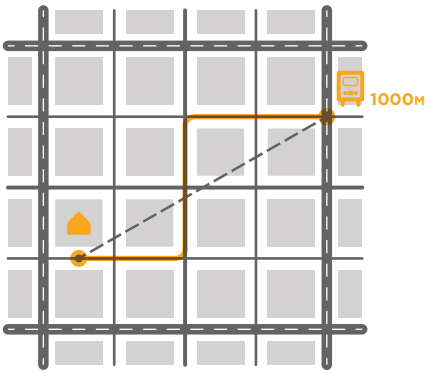


The "gross density" levels identified in the table are general averages, and do not imply a uniform distribution of buildings in the area being analyzed. To catalyze the highest possible demand, it is suggested to plan for the highest densities, regional facilities (See 3.4 Regional facilities) and for multi-family residences within a pedestrian and cycling trip of a maximum of 600 meters from the established public transit stops. In addition, public transit services must be in full operation when 80% of the residences are occupied.

1 Florida Department of Transportation (FDOT), Transit Oriented Development (TOD) Design Guidelines. // Greater London Authority, Housing for a Compact City, 2003, London, p.14. // Vasconcelos, E., Transporte urbano y movilidad en los países de desarrollo: reflexiones y propuestas, 2012, Sao Paolo, p.124.

NEIGHBORHOOD STRATEGY: ACCESS TO PUBLIC TRANSIT

To ensure accessibility to public transit for the entirety of the urban community, it is recommended that the public transit stops be located at points that are close and accessible to pedestrians. In other words, there must be a public transit stop at a maximum distance of 1,000 meters of pedestrian and cycling trajectory from any residence in the community. This is equivalent to a 15-minute walk and a 5-minute bike ride.



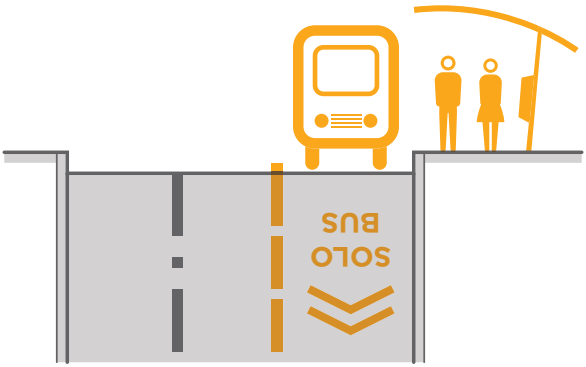
It is suggested to establish a public transit stop (bus bay, platform or shelter) at a maximum of 500 meters of pedestrian and cycling trajectory from any residence in the community. This corresponds to a 5-minute walk or a bike-ride of under 3 minutes. The streets that lead to public transit stops must be equipped with an appropriate sidewalk and bike path system (SEE 3.2 PEDESTRIAN AND CYCLING NETWORKS, SIDEWALKS AND BIKE PATHS).

ROAD STRATEGY: PUBLIC TRANSIT INFRASTRUCTURE

To achieve efficiencies in the operation of public transit, road infrastructure must accommodate for transit needs and the allocation of stops. Specifically, the following must be guaranteed:

A. A lane with a minimum width of 3.5 meters, with horizontal signaling indicating priority to public transit.

B. A bus bay for public transit boarding/alighting with vertical signaling (post, plate or screen) describing the public transit route.

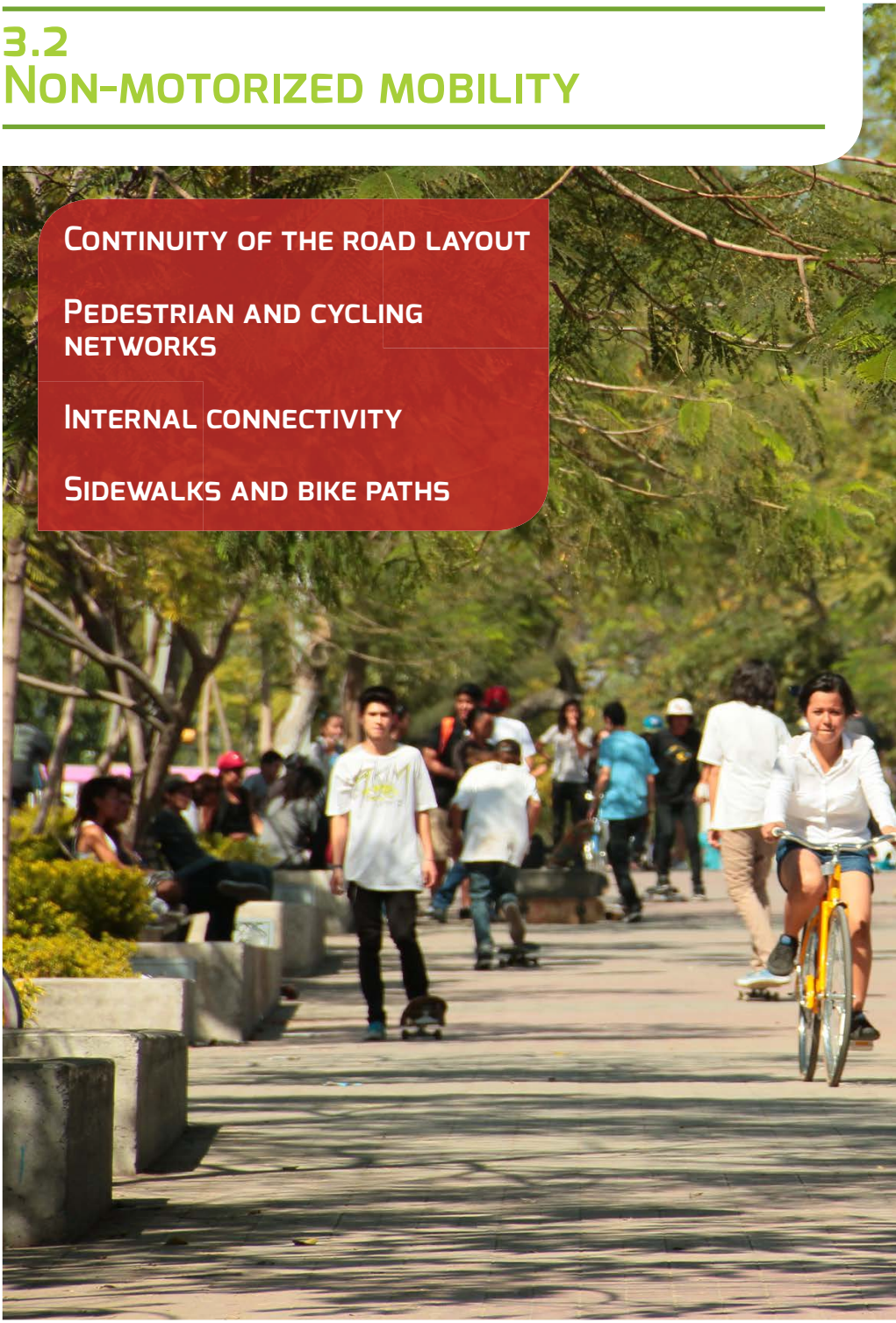


To make transit services more appealing and efficient, it is suggested that all:

A. Main roads have a right-of-way for public transportation, preferably with dedicated lanes.

B. Stops be sheltered, have a curb, up-to-date information on the route, a wide sidewalk space to minimize interference with pedestrian flow, and bicycle parking facilities adapted to the transit demand levels of the area.

3.2
Non-motorized mobility



Continuity of the road layout

Pedestrian and cycling networks

Internal connectivity

Sidewalks and bike paths

The objective of promoting non-motorized mobility is to increase the number of local trips, pedestrian or cycling, while providing a comfortable, safe and appealing experience. Each trip starts and ends with a pedestrian or cycling trip. Therefore, it becomes crucial to plan the sustainable urban community around pedestrians and cyclists. This seeks to motivate the residents of an urban community, especially those who use private vehicles, to undertake short, comfortable and safe trips on foot or by bike and, to establish a culture of non-motorized mobility.

The development of spaces destined for pedestrians and cyclists contributes to the accessibility of nearby amenities, to the activation of public spaces, and to the public safety of the sustainable urban community, as it brings more "eyes" to the street[1]. In addition to mitigating greenhouse gas emissions, promoting walking and cycling contributes to public health, as it is a daily or recreational physical activity, free to all, and prevents respiratory diseases, reduces obesity rates and prevents traffic accidents (See 3.3 Road safety).

1 Jacobs, Jane. The Death and Life of Great American Cities, 1961, New York.

Road structure interrupted by the residential development's borders

Roads that grant priority to automobiles over pedestrians and do not connect points of interest

Closed subdivisions with little connectivity and public safety issues

Inadequate infrastructure for pedestrians while excessive for automobiles

While fewer than 30% of urban trips are done by automobiles, 76.2% of federal mobility resources are allocated to the expansion and maintenance of roads, which then promote the exclusive use of automobiles[2]. This large investment is usually transferred as costs to individuals or residences, resulting in poor quality urban infrastructure and city facilities.

The prioritization of the private automobile is reflected in the distribution of land usage, the placement of road layouts, and the design of roads for the majority of residential developments in Mexico. According to the study Toward Competitive Low-Carbon Cities (C2C2), between 24% and 33% of the land used for low-income housing is allocated to roads that are primarily designed for the automobile. This results in an almost absolute dependence on motorized mobility, which creates hostile and unappealing environments for pedestrians and cyclists.

The closed settlement pattern also affects pedestrian and cyclist mobility: fences, boards or walls make street spaces unappealing and unsafe, and closed streets motivate residents to use the automobile for all their movements.

In addition to generating positive safety and public health impacts (increase in physical activity, better air quality), the promotion of non-motorized mobility catalyzes a better integration of the urban community with its immediate environment, and therefore, with the rest of the city.

2 Garduño Arredondo, Javier, Diagnóstico de fondos federales para transporte y accesibilidad urbana, 2012, Mexico, ITDP.

URBAN STRATEGY:
CONTINUITY OF THE ROAD LAYOUT

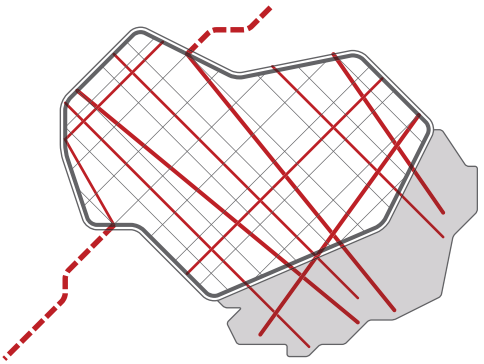
To make comfortable and safe use of non-motorized mobility viable for entering and exiting the urban community, pedestrian and cycling networks provide continuity with the surroundings of the sustainable urban community. To this end, it is recommended that:

A. All roads that lead to the urban community's border, or that circumvent it, have continuity toward the interior of the community.

B. New future roads be projected to connect with the urban footprint, avoiding the placement of residences at the head of the roads.

C. Roads that provide access to the urban community have adequate infrastructure for pedestrians and cyclists (See 3.4 Sidewalks and bike paths).

D. No restricted-access roads (such as those found in gated communities) or roads that give preference to automobile access be built.



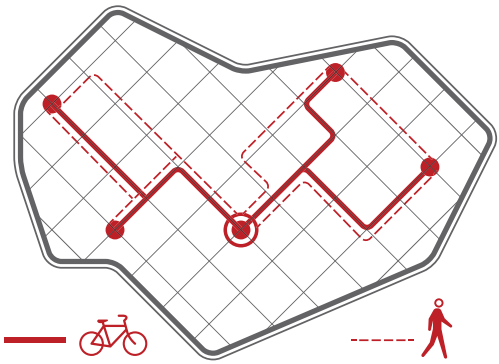
The borders of the sustainable urban community must have an intersection at least at every 250 meters within its perimeter, which represents half the walkable distance between two intersections. Not all roads must necessarily be built for vehicular traffic. They can also be wide pedestrian and cycling paths.

INTER-NEIGHBORHOOD STRATEGY: PEDESTRIAN AND CYCLING NETWORKS

The added value of pedestrian and cycling infrastructure is found in their ability to create networks. To achieve this, the routes must be connected to various points of interest that are appealing to cycling and pedestrian flows. To this end, it is recommended that the urban community have:

A. A bike-path network that connects neighborhood centers with each other, for the community's key origin and destination points.

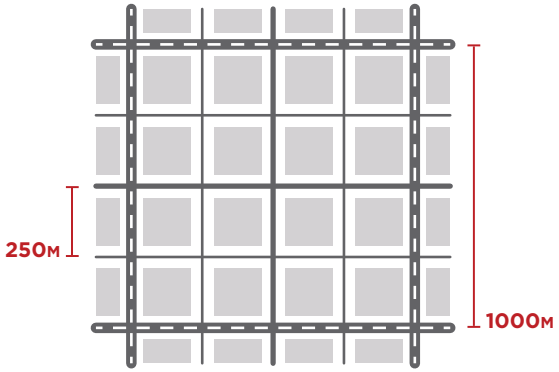
B. Pedestrian paths to access the residences, where roads may not be built as a consequence of residential privacy issues, reduced space between buildings, difficult topography, or areas with low vehicular traffic.



Pedestrian and bike paths are not exclusively for recreational use. Their routes must be direct and efficient, planned and financed along with local authorities to identify the shortest possible distances between the primary points of interest. In order to energize public spaces and local economies, it is suggested that strategic neighborhood center streets be chosen to become pedestrian paths or shared-use public spaces with non-motorized mobility.

NEIGHBORHOOD STRATEGY: INTERNAL CONNECTIVITY

To make non-motorized mobility an appealing transportation alternative, it must be ensured that the community has a road layout that creates short trips on foot or by bicycle. To this end, it is recommended that the urban community have high connectivity and no dead-ends. To make pedestrian and cycling trajectories easily walkable (less than 1,000 meters), it is suggested that none of the sides of an urban block in the community measure more than 250 meters.



To ensure a high degree of connectivity, compliance with a minimum index of 1.4 is recommended[1]. This index is calculated by dividing the number of segments (road links between intersections) by the number of nodes (intersections) within the surface of the neighborhood. A score of 1.4 implies more direct connections to travel between two points, as on average, there will be more paths available from each intersection.

1 Ewing, en Hacia Ciudades Competitivas Bajas en Carbono C^2C_2, Reporte Final. CTS Mexico, 2009, p. 103.

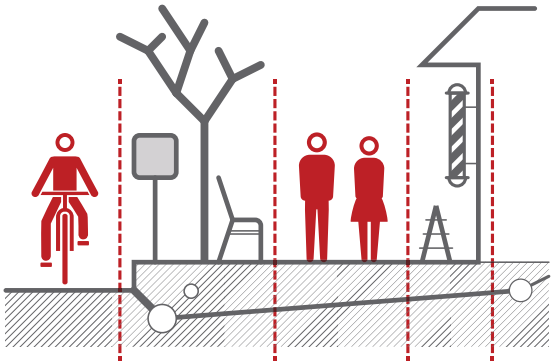
ROAD STRATEGY:
Sidewalks and bike paths

To ensure the comfort and efficiency of non-motorized mobility as a means for transportation, the spaces needed for bicycle and pedestrian traffic must be designed. To guarantee uninterrupted pedestrian flows, the sidewalk must be divided into three zones or segments:

A. One segment is for services, where urban furniture and vegetation are placed, and where the underground infrastructure is located for the network of urban services.

B. A pedestrian flow segment, where continuous pedestrian flow occurs without the invasion (or presence) of barriers, such as urban furniture, vegetation, lamp posts, ramps, steps, stations or buildings.

C. A segment in front of the buildings, which marks the transition between privately built spaces and the unbuilt public space.



To guarantee the generation of cycling trips, bike racks must be placed at all the facilities, residential buildings, retail areas, and public transit stops (See 3.1 Access to public transit). To keep cyclists from interfering with pedestrian flows, and to protect them from vehicular traffic, bike paths must be established at road level.

The size and character of each non-motorized mobility infrastructure varies according to the type of road and urban context: density, land usage, type of climate and road hierarchy. However, compliance is suggested with the following minimum suggested dimensions:

A. Services segment of the sidewalk must be of at least 0.6 meters.

B. Pedestrian flow segment of the sidewalk must be of at least 1.5 meters.

C. Front-of-buildings segment of the sidewalk must be of at least 0.4 meters.

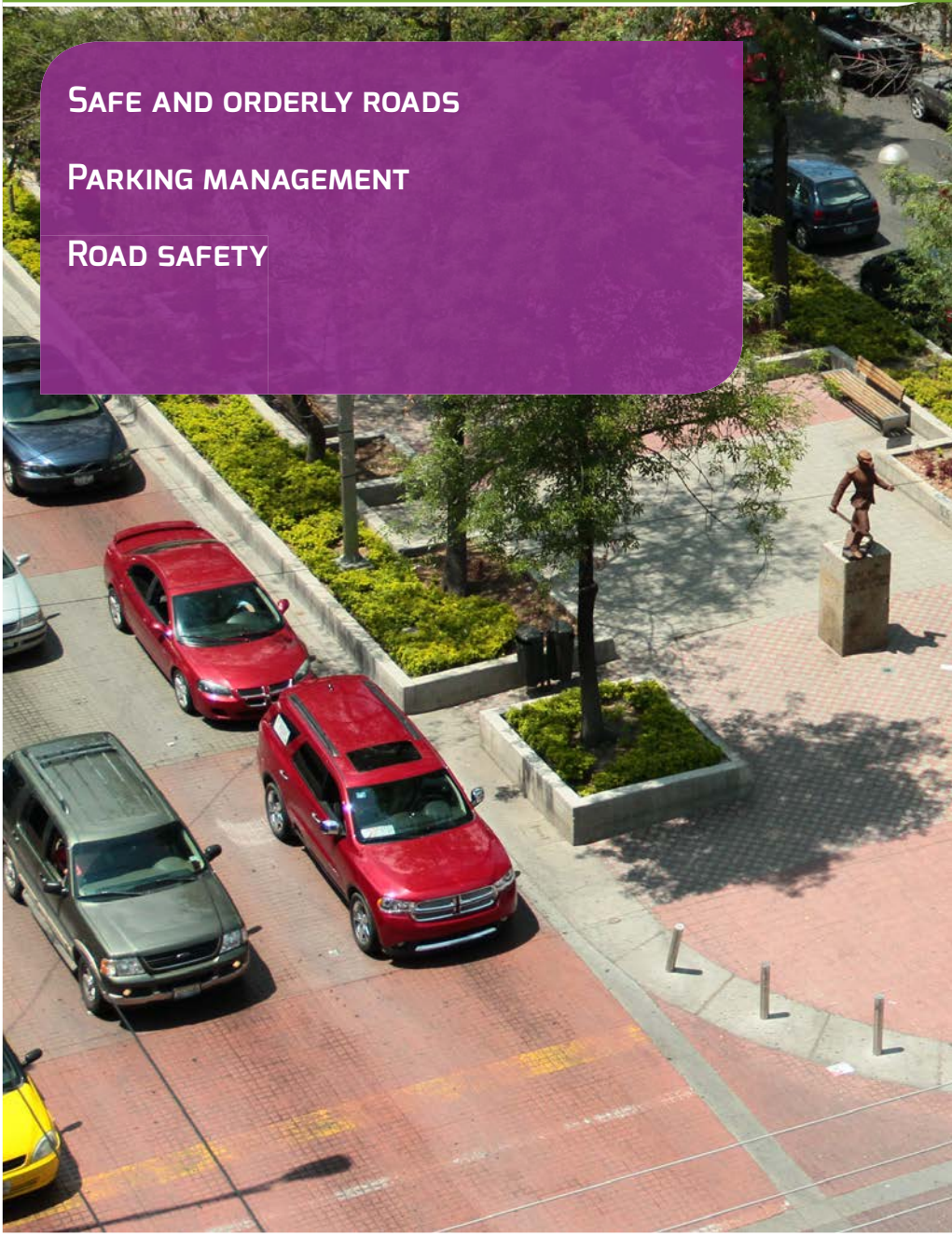
D. One-way bike paths must have a minimum free width of 1.5 meters.

E. Two-way bike paths must have a minimum free width of 2.5 meters.

For main roads, it is recommended that the sidewalks be clearly protected by vegetation or urban furniture, with surfaces that are permeable to the subsoil, and that bike paths be segregated.

The objective of managing automobile use and parking is to generate safe and enjoyable environments through the mitigation of automobile usage . While the usefulness of automobiles as an occasional means for transportation and long-distance trips is recognized, the goal is to promote an urban community – economic, environmental, social, and road safety approaches.

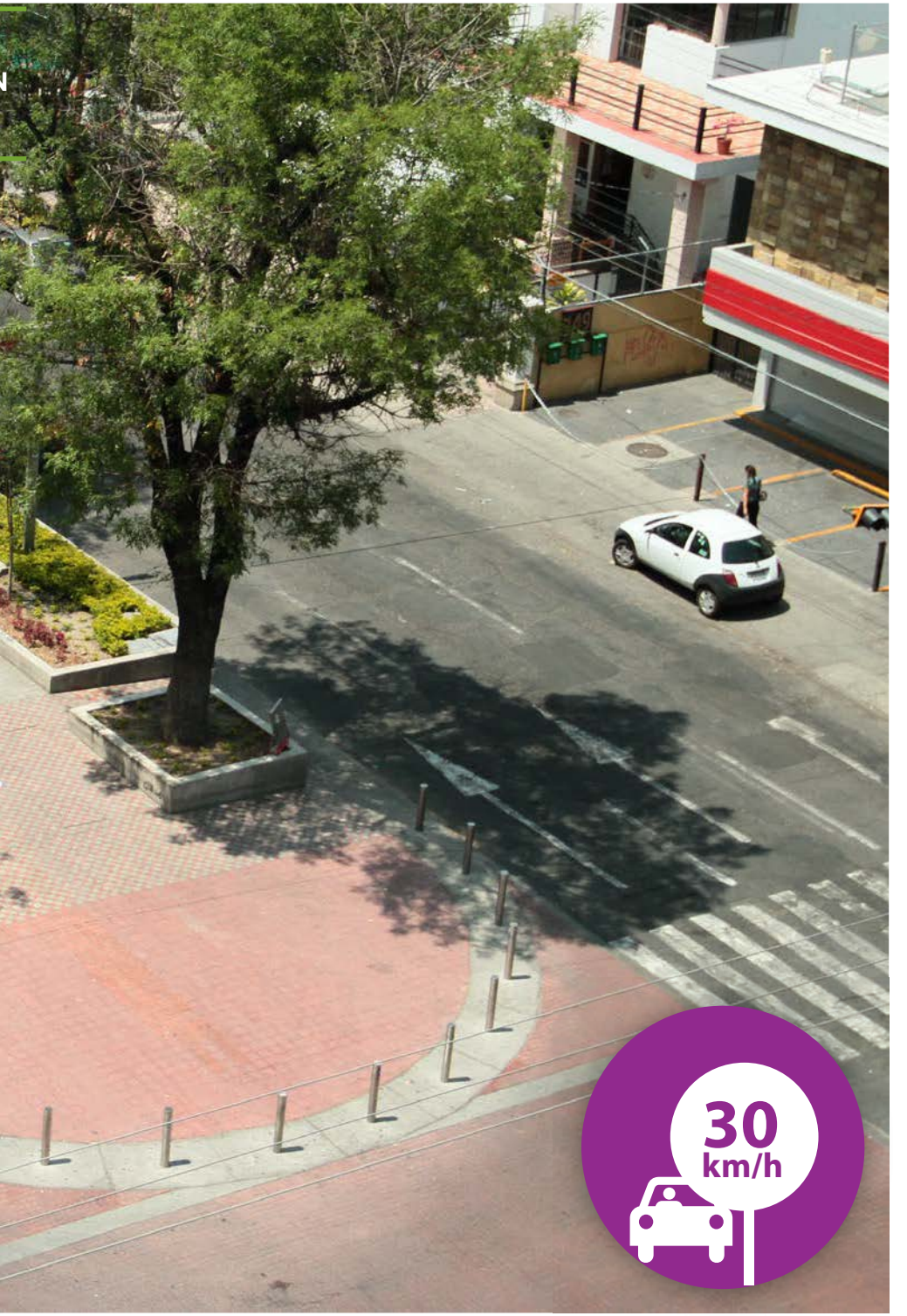
3.3
Vehicle Demand Management



Safe and orderly roads

Parking management

Road safety


30
km/h

First, there is an attempt to reduce the distances between residences and employment locations by developing sustainable mobility alternatives for the daily commutes undertaken by urban community residents. Second, there is an attempt to minimize road safety risks by decreasing traffic speeds through measures that do not provide obstacles to the flow of vehicular traffic, or produce hostile and dangerous environments for pedestrians and cyclists.

In addition to discouraging the unnecessary use of automobiles, the control and reduction of parking spaces leads to the creation of more pedestrian-friendly environments, which allows for an easier and safer access to the city's amenities.

Discouraging the use of private automobiles in the planning and design of a new urban community gives priority to the users of more sustainable means of transportation. The management of vehicles, combined with quality public transit service, contributes to reducing air pollution levels in the area, traffic accidents, and the time and cost of daily commutes.

Economically inefficient investments that encourage long and congested trips

Road widths that do not correspond to their urban and social contexts

Spaces that discriminate against the pedestrian and fail to organize automobile parking

Environments poorly designed for the pedestrian, which provoke accidents

The automobile has taken a dominant and growing position in Mexican cities since the 1980's. However, they only currently represent 25% of the modal distribution of all urban trips at the national level. The use of automobiles is inefficient because of the following:

- It generates vehicular congestion on roads that are designed for rapid transit, reaching speeds that are not better than those achieved by quality public transit, or in some cases, by bicycles;
- It promotes long trips over short ones, which leads to in excessive transportation times and unnecessary fuel costs;
- It is the second largest source of greenhouse gas emissions in the national economy;
- It creates traffic accidents, which are the leading cause of deaths in Mexican youths between 5 and 29 years of age.

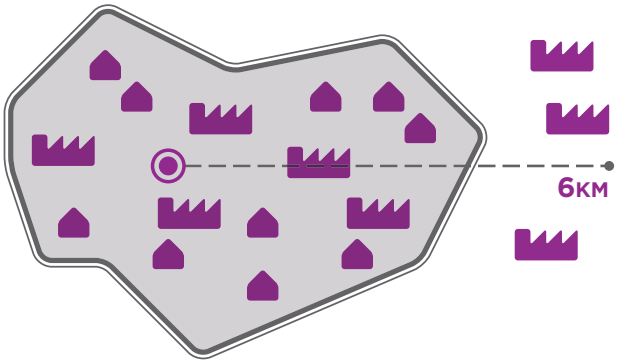
However, urban development keeps betting on the individual motorization of all urban trips, despite the fact that most of the residents seeking housing do not own an automobile (households that belong to the first 6 income deciles any account for 27% of car ownership and 30% of the annual acquisition expenditure)[1]. Only a small portion of the population is favored by the construction of infrastructure that is primarily destined for the use of private automobiles, which on an average, transports fewer than 2 passengers and occupy 2.6 times more space than a cyclist.

The lack of road network planning has created situations where residents have no other option besides walking on traffic lanes, or cyclists can only ride on the sidewalks. This situation can be reversed through urban design that acknowledges the significance of pedestrians as the key actors in urban mobility for Mexican cities.

1 Delgado-Medrano, 2010.

URBAN STRATEGY:
Optimization of daily commutes

With the goal of reducing the daily commuting distances between residences and employment areas (facilities, commerce, offices, light industry), there should be one formal job for every residence built within a pedestrian trip of 7 kilometers from any point within the urban community. This can be achieved by establishing urban communities near employment centers, and by encouraging productive uses within the community.



To prevent the indiscriminate use of private automobiles for daily trips, it is suggested that the following initiatives be promoted:

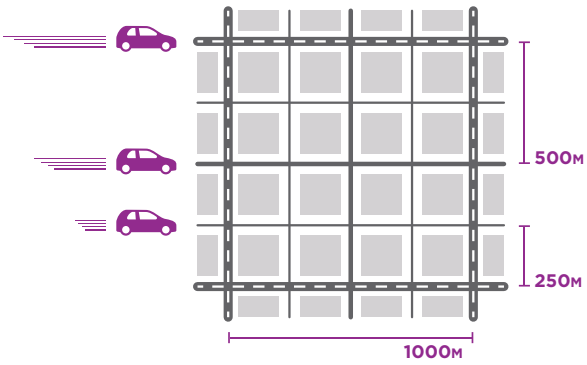
A. Management of automobile demand, such as corporate and school transportation, carpooling, and agreements with companies and association for the development of SHARED VEHICLE initiatives.

B. Employment of local labor within a seven kilometer trip distance.

INTER-NEIGHBORHOOD STRATEGY: SAFE AND ORDERLY ROADS

To distribute the volume of vehicular traffic in a balanced way, with optimum and safe speeds so that the roads can be shared with all other means of transportation, and according to the urban context, it is recommended that roads be established as part of a network. None of these roads should be designed for speeds greater than 60 km/h, and that should pursue the following functional classification:

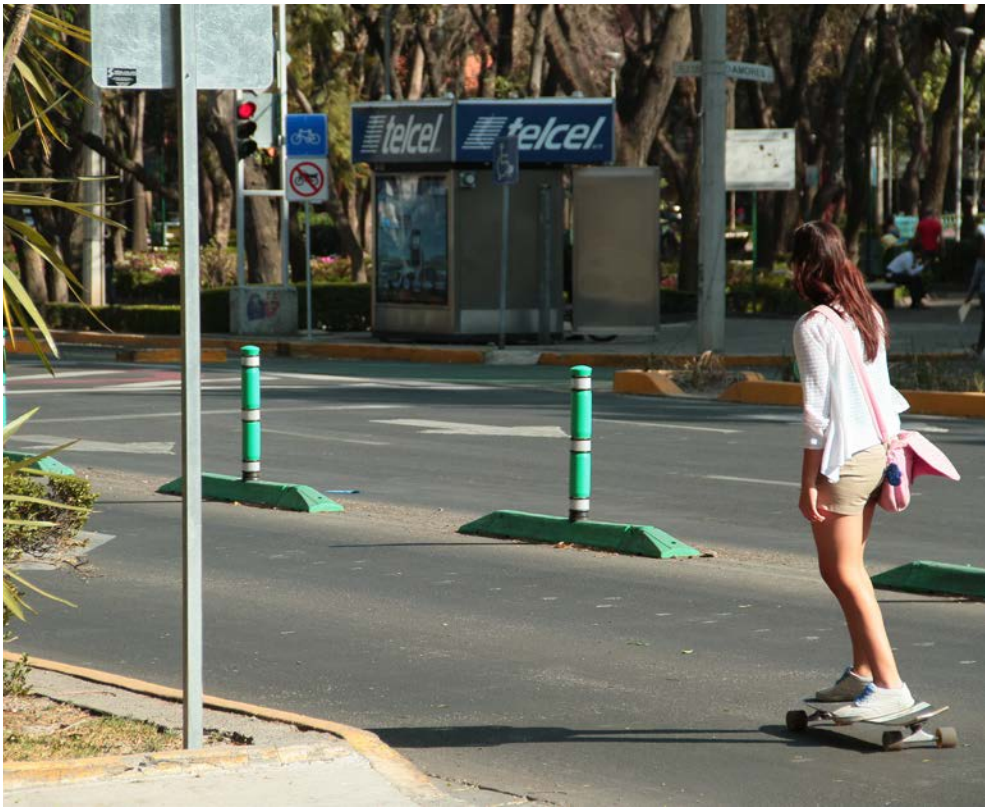
	FUNCTIONAL CLASS OF ROAD		
PROPERTIES	**PRIMARY**	**SECONDARY**	**LOCAL**
Function	Provides through transit and connection to regional roads.	Links local roads to the primary roads system	Provides access to residential areas or roads with local environments
Maximum design speed	60 km/h	50 km/h	40 km/h
Number of total lanes	4 - 6	2 - 4	2
Lane width (meters)	3 - 3.5 m	3 - 3.35 m	2.75 - 3 m
Gross density of the urban environment	Medium - High	Medium	Medium - Low
Maximum distance between roads of the same type	1,000 m	500 m	250 m



When possible, the establishment of "30 Zones" is recommended for neighborhoods with predominantly local roads, designed for automobile speeds below 30 km/h, in order to prioritize non-motorized mobility and encourage community living (See 3.4 Sharing the street). To this end, the following design parameters for roads are suggested based on functional classification,[1] and considering minimum widths and qualitative infrastructure properties for non-motorized mobility (See 3.2 Sidewalks and bike paths):

	FUNCTIONAL CLASS OF ROAD		
ROAD CROSS-SECTION DISTRIBUTION	**PRIMARY**	**SECONDARY**	**LOCAL**
Segregated bike path (min. 1.5 meters)	YES	OPTIONAL	NO
Median (min. 1.8 meters)	YES	OPTIONAL	NO
Parking on road (min. 2.15 meters)	OPTIONAL	YES	OPTIONAL
Sidewalk (greater than 2.5 meters)	YES	OPTIONAL	NO
Exclusive public transit lane (3.5 meters)	YES	OPTIONAL	NO
Freight traffic	REGIONAL	LOCAL	NO
Total recommended cross-section	30 m	20 m	11 m

1 Ibid, ITE, p.54.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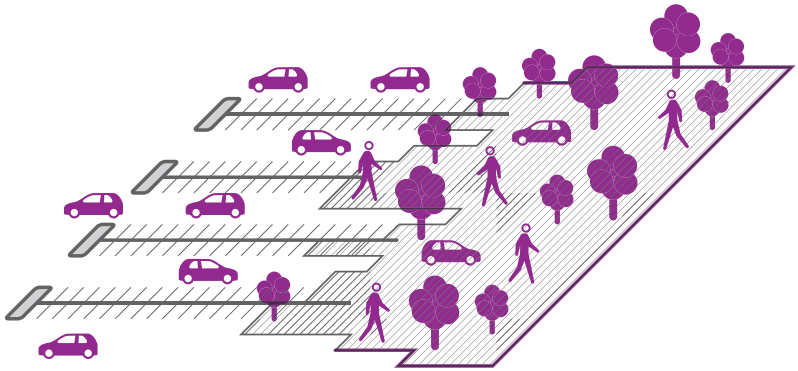
NEIGHBORHOOD STRATEGY: PARKING MANAGEMENT

To reduce dependence on automobile use, and to mitigate the negative effects created by the demand for private vehicles, the supply of free parking must be reduced as follows:

A. For private parking facilities within the community, the following is recommended:

1. Determine the number of spaces per residence based on the levels of motorization of the region's residents, or corresponding to the socio-economic market for which the residences are built.
2. Facilitate the sale of parking spaces separately from the purchase of residences in multi-family units.
3. Allow the exchange of a parking space for a private or collective bicycle parking facility.

B. Parking facilities on public roads must be well-defined, located according to the road's service level (See 3.3 Safe and orderly roads), with appropriate signage. When there is high demand, especially in retail and mixed-use zones, a regulated payment system should be used (e.g. parking meters).



To effectively use vehicle parking spaces, especially during well-defined schedules with good signage and signalling, the following compatibilities be considered:

A. One collective parking facility within a residential zone can be used as a play area or community space.

B. The parking surface of a retail area may be converted into a public space, sports surface, or complementary open market.

Residents from multi-family buildings must be able to choose between a parking space for four bicycles or for one automobile. Other bicycle parking facilities must be provided in the neighborhood's center to allow for the bicycle to become a viable means of transportation (See 3.5 Neighborhood centers).

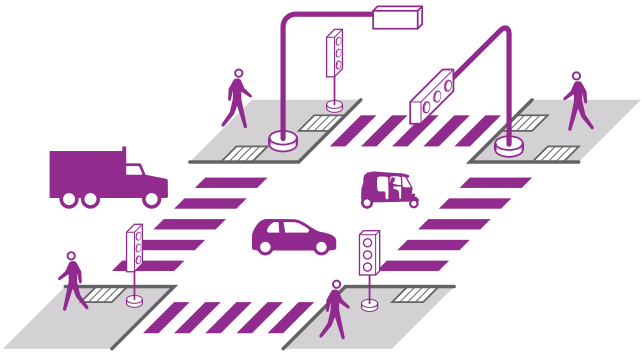
ROAD STRATEGY:
Road safety

To promote the mobility of the most vulnerable citizens, and to allow for the sharing of roads with motorized traffic, crosswalks and intersections must be designed to be clear, friendly and pedestrian oriented, guaranteeing that:

A. Traffic signals provide a relevant and clear message from an appropriate location, so all the users of the street (not only the automobiles) can be guided and maintain mutual respect.

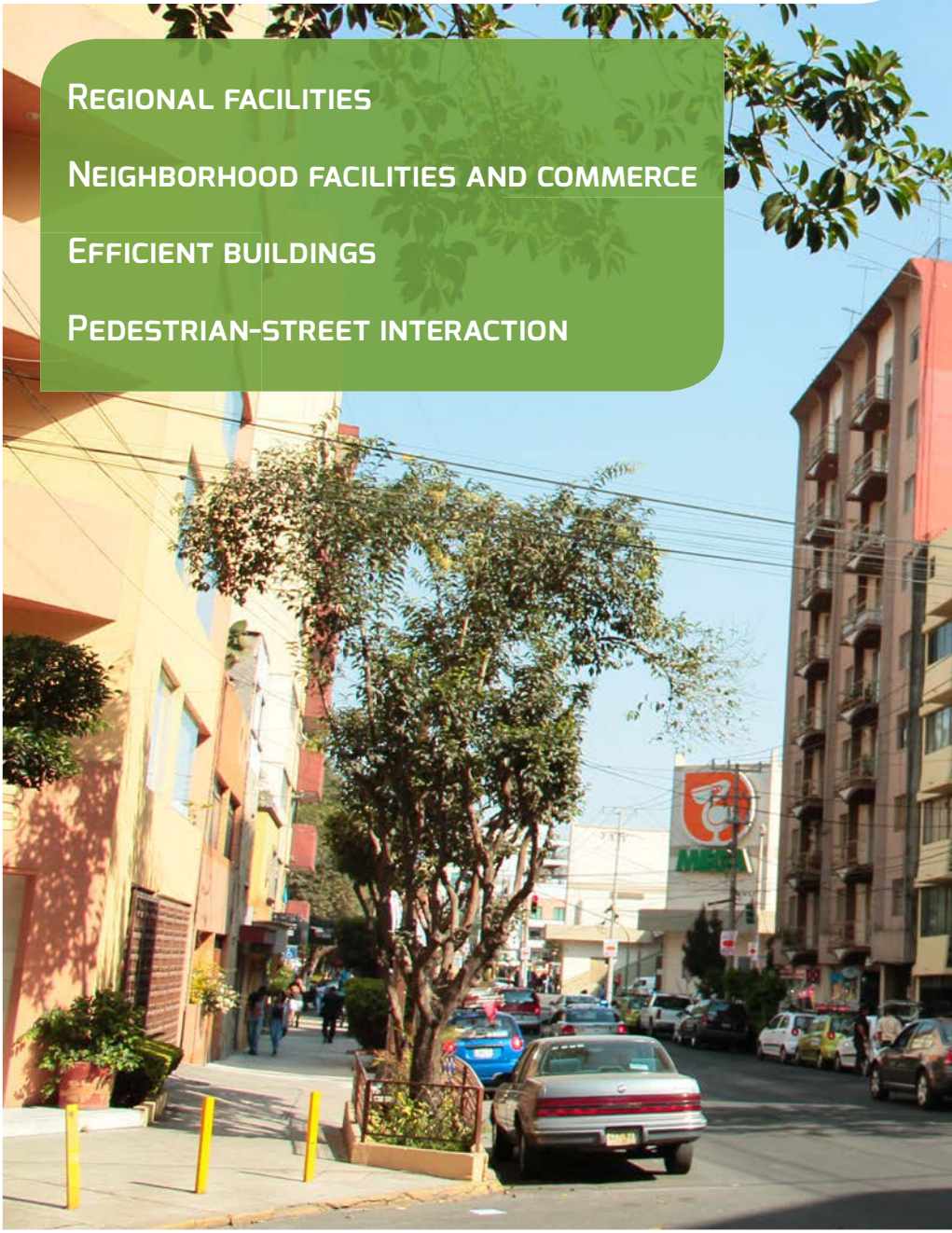
B. The infrastructure is adequate for all types of users (children, adults, the elderly, persons with disabilities, pregnant women, etc.) to cross without any obstacles.

C. The crossing is kept short, so pedestrians can cross quickly and be less exposed to automobiles.

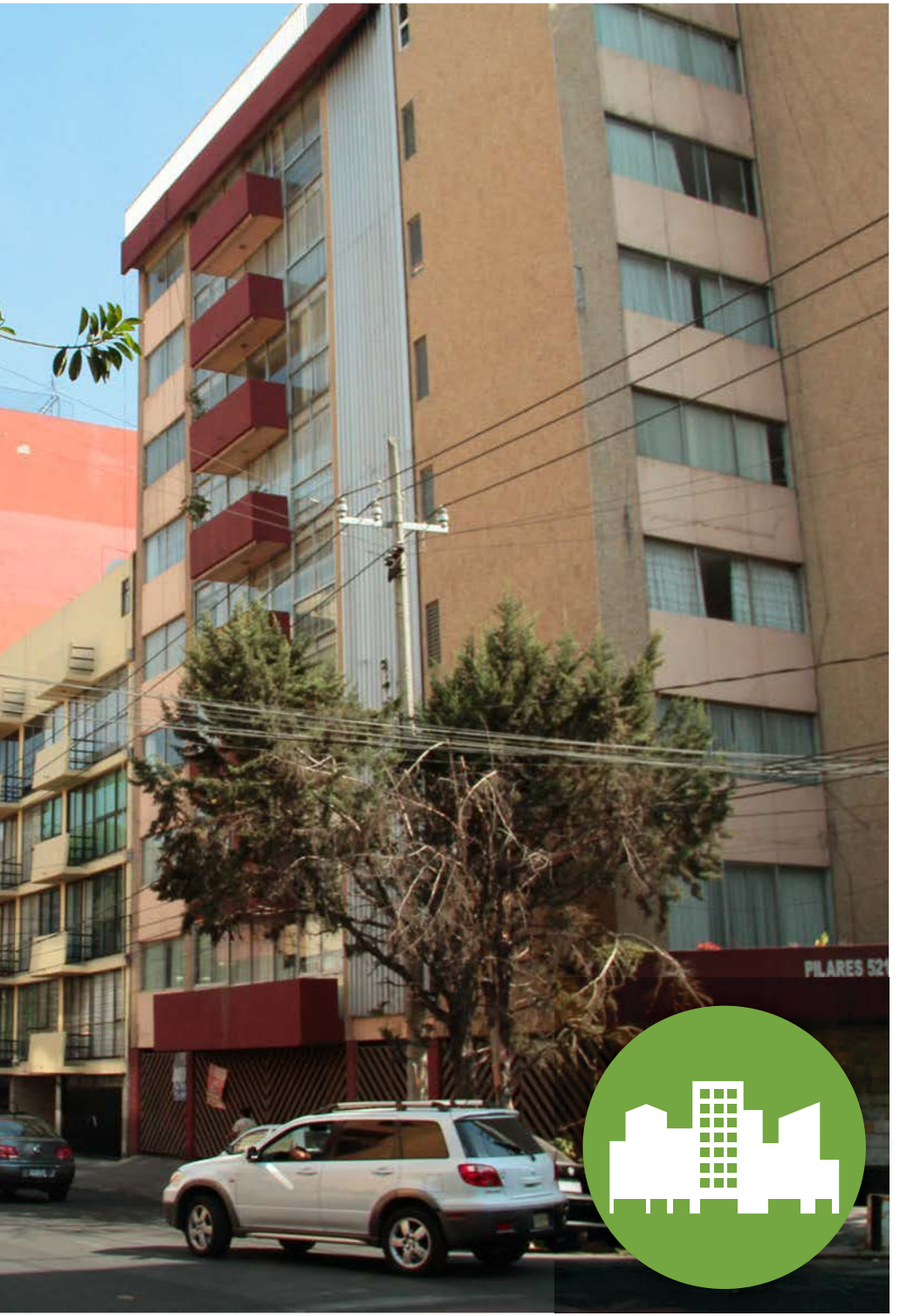


It is suggested that pedestrian crossings be at sidewalk or road level (with ramps of at least 0.8 m of width at both ends and a maximum slope of 8%), that intersections create 90° degree angles, and that they have appropriate horizontal markings. It is also recommended to reduce the number of roads that share the intersection, and the allowed vehicle maneuvers.

3.4
Mixed-use and efficient buildings



- Regional facilities
- Neighborhood facilities and commerce
- Efficient buildings
- Pedestrian-street interaction


PILARES 521

The objective of achieving mixed and efficient uses of space is to energize economic and residential activity through the use of densely-populated spaces that are diverse and built in well-designed environments. An appropriate mix of space usage promotes short trips and therefore, better efficiencies in the use of energy resources allocated to mobility. In addition, each building within an urban community has the potential of consuming minimum levels of energy, water, and materials for its construction and maintenance. The strategies described in this document combine both, principles under the same efficiency logic for the design and specific location of buildings in an urban community, from small kiosks to commercial spaces to regional amenities.

By designing mixed-use spaces, a diverse range of urban services can be ensured for city residents. The diversity of uses within sustainable urban communities makes them appealing destinations, encourages the use of public spaces, promotes non-motorized mobility, and generates economic value. Also, the promotion of "smart buildings" that incorporate active and passive technologies to reduce consumption of electric power, gas and water may result in savings of up to 42% in operations and maintenance costs.

In summary, the diversity of uses and the establishment of eco-technologies, such as smart architectural design aid in building an efficient economic system, which increases a community's wealth.

Developments that fragment donation service facility areas for residences

Residential areas that spontaneously compensate for the lack of basic commerce

Homes designed with minimal spaces and maximum consumption of resources

Streets that do not provide for semi-permanent commerce

On one hand, the massive building of low-income housing has created "bedroom communities", instead of allowing for the generation of conditions that promote a competitive city. On the other hand, the construction of low-income housing rarely considers other infrastructure and facilities necessary for the urban life of thousands of people. The spaces planned for these purposes are often left vacant and are poorly maintained as a result of lack of investment interest from the public/private sectors.

To neglect the economic, social and cultural needs of a community's residents implies a very high cost for the residents, real-estate developers and local authorities: the trips undertaken by local residents immediately increase in time and cost; islands are created that prevent residents from enjoying the city's basic amenities; they generate social enclaves that damage social cohesion, as they are only intended for families of a certain socio-economic level; and lastly they are, lost economic opportunities that could potentially result in the continuous vitality of a community and generation of value, instead of creating tensions and social inequality.

URBAN STRATEGY: REGIONAL FACILITIES

To guarantee that residents have access to the services offered by the city, the capacity levels of existing or under-construction facilities must be identified in the areas surrounding the community. From any of the community's areas, public access must be granted to at least a:

A. High school that is, at most, a 2.5 kilometer trip.

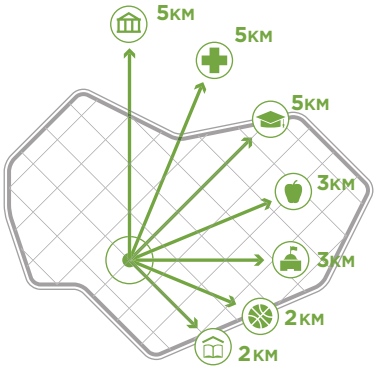
B. Municipal office or branch that is, at most, a 3.5 kilometer trip.

C. Grocery store that is, at most, a 3.5 kilometer trip.

D. College that is, at most, a 6 kilometer trip.

E. Health center that is, at most, a 6 kilometer trip.

F. Cultural facility that is, at most, a 6 kilometer trip.



The capacity of the existing facilities to absorb the new demand from residents of the urban community must be assessed. If the supply is insufficient, it is important to plan the construction of the required facilities in coordination with local authorities, so that key locations can be leveraged for the recreation of the urban community and its neighbors, and to prioritize access by public transit and non-motorized mobility (See 3.2 Pedestrian and cycling networks).

INTER-NEIGHBORHOOD STRATEGY: NEIGHBORHOOD FACILITIES AND COMMERCE

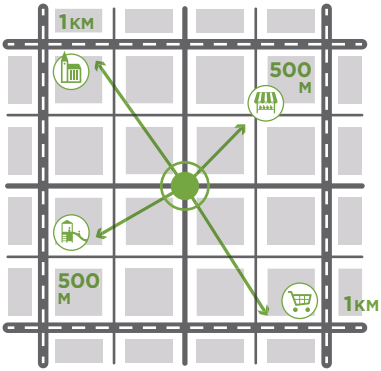
To ensure that the neighborhood or nearby neighborhood center contains the various land uses needed by its residents for their day-to-day, it is necessary to provide effective basic accessibility from the residences to facilities and commerce. From any of the community's areas, public access must be granted to at least:

A. Retail that is, at most, a 600 meter trip.

B. A playground that is, at most, a 600 meter trip.

C. A pre-school and an elementary school that are, at most, a 1 km trip.

D. A space destined for open or movable markets that is, at most, a 1 km trip.



It is suggested to locate or allocate spaces for small schools, pre-schools, and basic grocery retail on the corners of every block, or at least on primary or secondary roads near their main intersections.

NEIGHBORHOOD STRATEGY: EFFICIENT BUILDINGS

For the urban community to have buildings that consume resources in an efficient manner and maintain their operations at the same level, the installation of eco-technologies or passive systems for saving resources and reducing maintenance costs must be encouraged for the majority of buildings constructed, so:

A. Owners have assurance of constructionquality.

B. The buildings have reduced water and power consumption, when they comply with the following conditions:

1. Lighting is provided by compact fluorescent bulbs or other types of energy-saving bulbs, and water heating is done with at least one solar heater.
2. Buildings achieve a 30% decrease in consumption of drinking water (for residences, based on the reference from the Residential Water Savings Simulator), and a 35% decrease in energy demand (for residences, based on the Residential Energy Efficiency Simulator)[1].

To achieve these water and power consumption efficiency levels, the following is recommended:

A. To reduce water consumption through strategies that consider the re-use of grey and rain water, or by recycling it through nearby waste-water treatment plants (SEE 3.6 ENERGY, WATER AND WASTE EFFICIENCY)

B. To provide lease options for persons who have no access to a green building (because of low-income or frequent labor mobility, for example), but have the ability to make monthly payments.

C. To implement as many strategic programs as possible, such as INFONAVIT's Green Mortgage.

D. To certify buildings as sustainable or energy-efficient through recognized national or international systems.

1 Both simulators are currently integrated into INFONAVIT's Green Mortgage Simulator http://201.134.132.145:82/simulador-HVWeb/home/simulador.jspx

ROAD STRATEGY:
PEDESTRIAN-STREET INTERACTION

To encourage the local economy, and a variety of pedestrian activities on the street, it must be ensured that the public space be inviting for pedestrian use through appropriate design. To achieve this, the services section of the street's sidewalks (See 3.2 Sidewalks and bike paths) must consider the following:

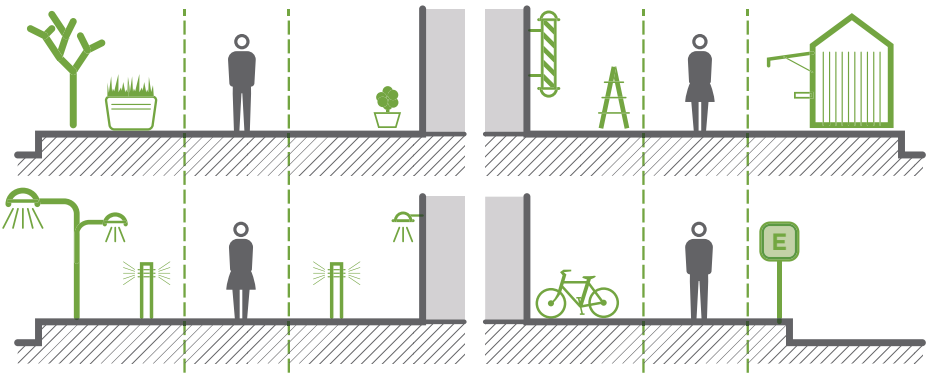
A. Local vegetation

B. Public lighting

C. Appropriate signaling and signage

D. Useful street furniture

E. Public services



The services section of the sidewalk is a space with the ability to host several types of infrastructure at the same time. The variety and spacing between the components depends on the urban context and the road's service level. However, it is suggested that the following be installed:

A. Continuous rows of trees and local vegetation, so a continuous plant mass can be created to generate shading, allow the percolation of water to the subsoil, promote CO2 absorption, and create an enjoyable environment.

B. Pedestrian public lighting, especially created for the lighting of sidewalks and intersections, to allow for safe walks during the night hours.

C. Signaling that is homogeneous and visible to the pedestrian at a minimum, at every corner and road intersection, and with information that is useful to pedestrians.

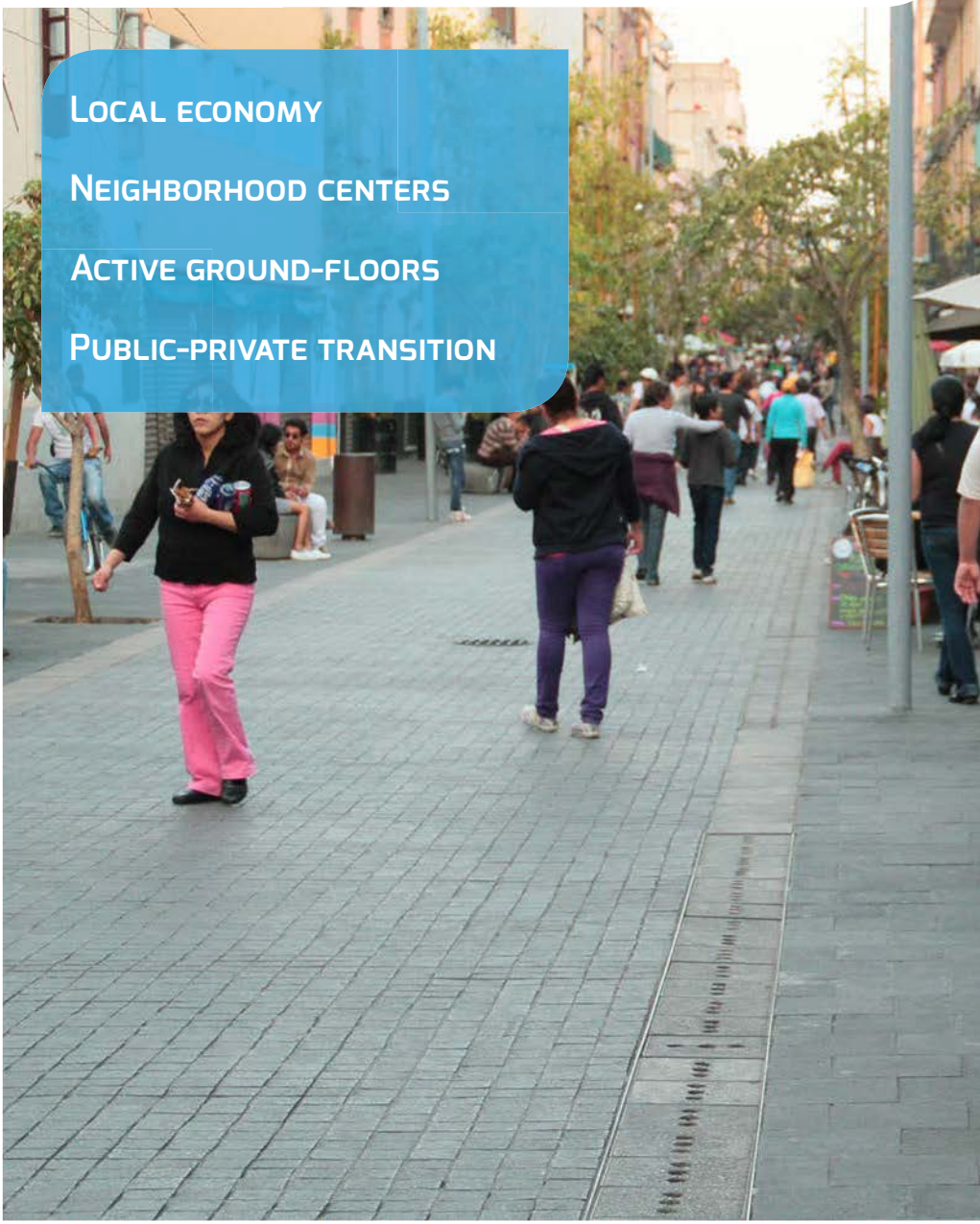
D. Sidewalks, steps, planters or urban furniture that allow for seating along the sidewalk, especially in front of facilities, commerce and public services. They also help to create a border for the street's public space.

E. Spaces for kiosks, stands or trucks for the sale of food, periodicals, crafts, and other low-impact retail businesses that complement permanent retail locations (See 3.5 Active ground-floors).

F. Garbage, recycling and compost containers placed at every intersection (at a minimum) and in front of public and commercial facilities.

G. Phone booths, mail boxes, bicycle racks and other urban services infrastructure on sidewalks with at least 1.2 meters of additional space.

3.5
Neighborhood centers and active ground-floors



Local economy

Neighborhood centers

Active ground-floors

Public-private transition


TOYOTA

The objective of promoting neighborhood centers and active ground floors is to promote social interaction through the energization of ground floors, which contribute to the efficiency in the relationship between public spaces and the built environment. A sustainable urban community must provide density and variety of non-residential activities to complement the residential and public space ones, and it must be encouraged by non-motorized mobility networks and by connections to the public transit network.

The strategies of this DOTS® component carry the concept of active ground floors beyond the stereotypical multi-family residence with a ground floor and little commerce. Starting from the logic that an active ground floor is the access point to a diversity of space use within one building; at a greater scale, the neighborhood's center contains a great amount and diversity of non-residential space use within a central location in the neighborhood. This creates the most recognizable meeting point in the area.

Promoting the creation of neighborhood centers catalyzes the creation of new economic activity generates additional employment opportunities, and increases the number of short trips to cover the majority of the residents' daily trips. It also stimulates social interaction on the streets and public spaces, which creates urban communities that know each other, and take care not only of each other, but of others who visit from other parts of the city.

Residential developments whose design does not encourage the generation of local employment

Lack of building diversity, density of activities or recognizable centers

Facilities whose façades reject the communities they serve

Private property boundaries that are aggressive towards passersby and neighbours

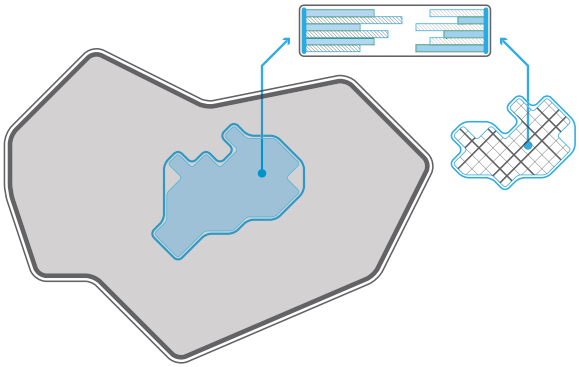
The current residential construction pattern in Mexico produces urban enclaves where social interactions are "turned-off", as people tend to isolate themselves at their workplace during the day, and at home during the night. This phenomenon is intrinsically linked to the urban structure of this type of residential development. In addition to hindering the community's internal mobility (by increasing dependence on regional, primary, and arterial roads to exit the enclave), there is a severe lack of spaces where the community can come together to create an identity and sense of ownership for its residents.

The severe lack of understanding of the physical and social dynamics of the space where people reside results in poor practices. Instead of addressing the negative issues they intend to resolve, these practives produce negative impacts to the urban community. For example, if the transition between public and private spaces is not designed from the start, or is not entirely clear, it may prompt residents to build fences and to take self-segregating measures, which run contrary to desirable social dynamics.

The lack of planning for activities that complement housing, the spaces and public facilities results in an invasion of informal-economy retail in the best of cases, or abandonment of the area, in the worst cases. The way in which the efforts are being allocated to recover abandoned residences and neglected housing developments focus on precisely this issue – promoting the generation of economic activity that is local and diverse, that motivates the residents to stay within the community and to take care of it, and to promote the return of residents who have left.

URBAN STRATEGY: LOCAL ECONOMY

All urban communities have the ability to create the conditions necessary for local economic development, as there is always a latent population with needs for employment, facilities and nearby commerce. To take into account the socio-demographic profile of the urban community, its environment and the culture of the location where it is placed, and the local economic needs, it is recommended to analyze the primary, secondary and tertiary economic sectors of the community's city, and to use this analysis as a base to guide the planning of the community's future economy.



To guarantee the generation of employment for the residents of a sustainable urban community, and to encourage local economic dynamics, the following is recommended:

A. To offer residences with integrated commercial spaces, or "productive residences".

B. To allow for the conversion of single-family homes into "productive residences", retail locations, or local facilites (See 3.6 Neighborhood facilities and retail).

C. To build or attract investment to generate employment centers that are integrated and connected to the sustainable urban community. This can be achieved through agreements with investors, regional business, or local authorities.

INTER-NEIGHBORHOOD STRATEGY: NEIGHBORHOOD CENTERS

It is important to have at least one center that is recognized by the entire urban community. A neighborhood center is usually established with facilities and commercial activity around a public space, and it is typically well connected with other neighborhood centers within the urban community. Specifically, neighborhood centers must have:

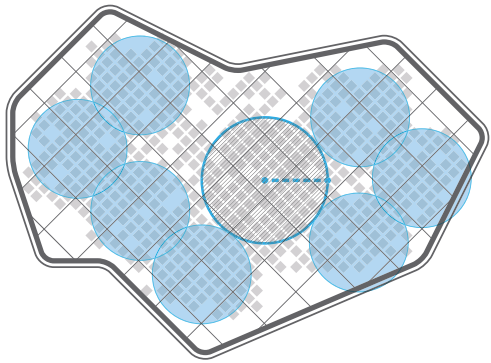
A. At least 4 different lines of business with distinct space usage[1] within a 600 meter pedestrian trip.

B. Greater densities than the rest of the development within the same pedestrian trip distance.

C. A public transit route that connects it to other neighborhood centers in the community and/or the rest of the city.

D. A consolidated public space (mixed-use street with wide sidewalks, pedestrian street, garden, park) (SEE 3.6 PUBLIC SPACE NETWORKS).

E. A specific urban image or URBAN LANDMARK that provides a unique identity.



The sustainable urban community must provide its residents with the ability to enjoy their city both during the daytime and during the evening hours, and it must allow its residents to perform various activities at any time and in a manner that is comfortable, safe and efficient. To this end, the following is recommended:

A. Promotes commercial spaces and facilities, within the neighborhood center, that provide healthy evening activities, such as: restaurants, hospitals, cinemas, pharmacies, theaters, gyms, auto repair shops, etc.

B. Planning an evening public transit route that provides services until at least midnight.

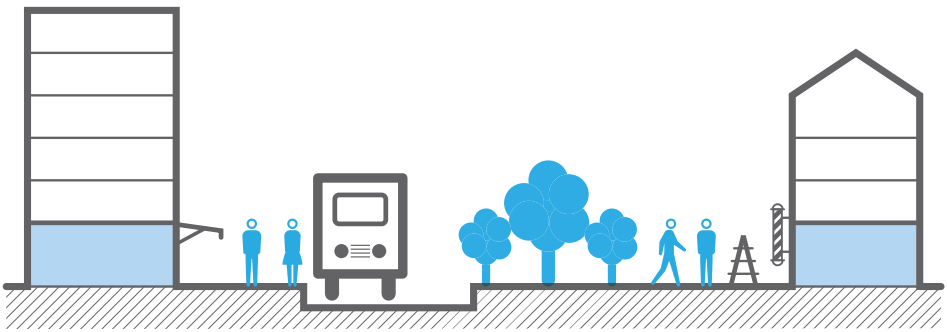
1 Food (Markets), Retail, Community Commerce (Services) and Community Facilities (Public Facilities), according to LEED ND, Appendix. Diverse Uses. p. 110.

NEIGHBORHOOD STRATEGY: ACTIVE GROUND FLOORS

To encourage the diversity of mixed use of space and social links, the ground floors of buildings must interact with the street and the public spaces that surround them. To this end, neighborhood centers must contain at least:

A. Buildings with commercial ground floors and residential or office uses for the top floors. This is particularly important for those buildings that surround public spaces, facilities, pedestrian streets and streets with potential for greater pedestrian flows.

B. Commercial spaces that enhance community living (cafés, salons, tortilla shops, etc.) for both the interior of the building, as well as for locations that face the sidewalk or street.



The effectiveness of active ground floors is increased when an analysis is performed on the complementary nature of activities within the sustainable urban community and their relation to the movements of its residents. To this end, it is recommended that:

A. Businesses contribute to the activities performed in nearby facilities and public spaces (supply stores near schools, banks next to shopping centers, coffee shops under offices, ice cream shops in front of squares).

B. The roads prioritize public transit and non-motorized mobility, offering adequate infrastructure, and connecting public spaces with the rest of the urban community. They must also provide a perimeter for low-speed zones. (See 3.2 Pedestrian and cycling networks, 3.3 Road safety)

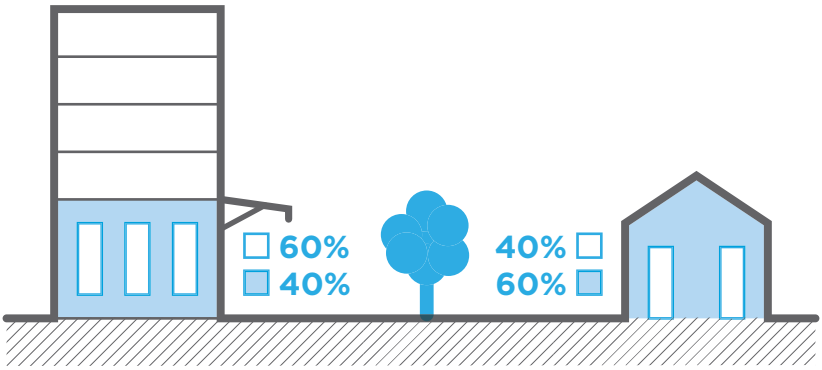
ROAD STRATEGY:
PUBLIC-PRIVATE TRANSITION

To guarantee the success of the various activities and uses of space, it is essential to design the transitions between the public environment and private areas, while considering the architectural context, pedestrian scales, and perception of public safety for the urban community. The treatment of these transitions varies depending on the function and uses of the spaces. Therefore, the following must be sought:

A. Approximately 60% of the primary façades of all commercial ground floors that border the sidewalk or a public space must be transparent, occupied by windows, displays and doors.

B. Approximately 40% of the primary façades or perimeter walls of all residences must be transparent (windows, doors, lattice work).

To improve the transition between private and public spaces, to encourage community living and to promote



safe environments, it is recommended that perimeter walls for each lot in residential streets be permeable, through:

A. Setbacks no greater than 5 meters for private buildings and 10 meters for public buildings, and for any of their façades.

B. Heights of individual walls that do not exceed 3 meters.

C. Appropriate lighting from the building for passersby, and directed to the sidewalk.

D. Use of fence work, lattices, semi-opaque glazing, textured materials or placement of vines to allow for visual permeability.

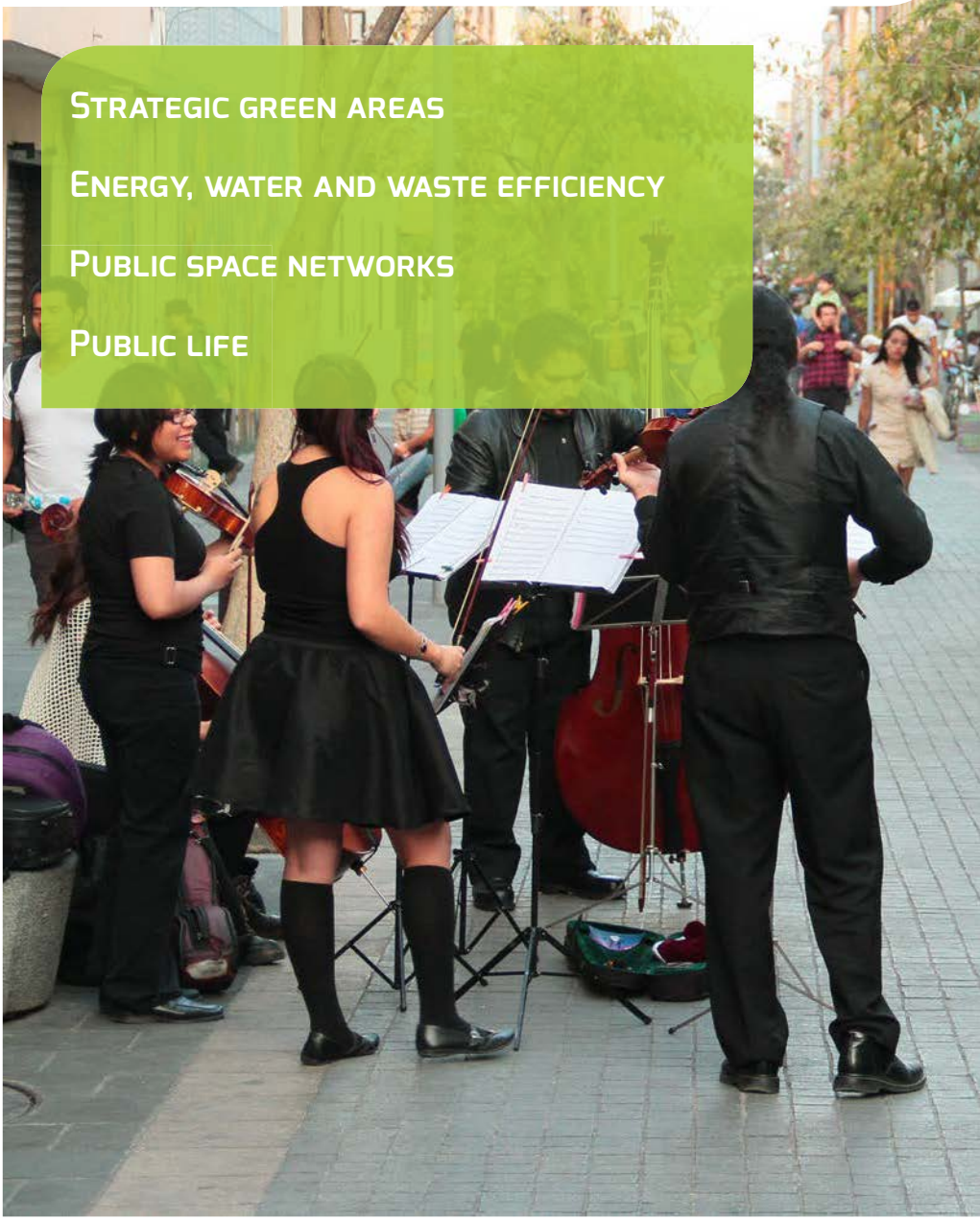
E. Materials that play with textures, and vegetation that is preferably endemic.

F. Frequent openings and disruptions to the wall's continuity, with the exception of vehicular accesses.

G. Priority for pedestrian accesses, avoiding the disruption of the movement of passersby with access ramps on continuous sidewalks.

H. Openness to the public of all of its accesses to the urban community, avoiding the establishment of vehicle control booths and private security.

3.6
Public spaces and natural resources



Strategic green areas

Energy, water and waste efficiency

Public space networks

Public life

The objective of generating safe and active public spaces is to encourage public life and social interaction through spaces that are accessible to pedestrians and cyclists. Public spaces are points for meetings, exchange and transit within the urban community. They are defined as places where any individual has the right to enter or stay without being excluded for personal, social or economic reasons.

However, public spaces must also be considered as strategic environmental resources. In addition to using natural resources, energy and water for its operations and maintenance, at an urban community level, public spaces and in particular, urban green areas are risk mitigation zones, areas that protect against natural disasters, areas for drainage and capturing rainwater, oxygen-production sources, habitats for the region's flora and fauna, among others.

Since they are appropriate for interaction with the immediate natural environment, as well as for the development of recreational, educational and commercial activities, public spaces enrich the experience of all residents of an urban community. They are excellent spaces for social and environmental sharing, and therefore, when they become appealing, accessible and healthy, they can become the residents' biggest source of pride. When considering recommendations for urban public spaces, spaces destined for environmental preservation must be considered along with those spaces needed for changing modes of transportation, congregation and recreation.

Green areas that are not strategically leveraged and are considered residual spaces

Severe negligence in the management of solid waste and lack of waste water management

Creation of disconnected, desolate, and fragmented public spaces with little activity?

Recreational infrastructure construction that does not generate public life

At times, public spaces are considered an afterthought during the urban design planning process, or are understood to be the addition of several isolated spaces. This happens frequently, with few of their benefits taken into account, and social, economic, environmental and health benefits being ignored. These benefits are directly related to the use, maintenance and appropriation of the space by members of the community.

To have a public space or a green area only to comply with zoning regulations, without adequate planning and support, and without studying the benefits and environmental advantages it contributes, can lead to the deterioration of the community and the city's social and urban environments. In addition, it may create the need to commit further financial resourcesin the future, to resolve issues that can be prevented from the start. On the other hand, public spaces are usually seen only as a tool to sell a home, and once they have served their purpose, they often become an additional burden to the residents who have to pay for costly maintenance of surfaces that are too extensive, with precarious infrastructure, orinappropriate vegetation for the natural context.

Almost immediately, it can be observed as these spaces are neglected or abandoned because they have poor accessibility and are not appealing to residents; or because they were not planned to be productive spaces, which makes them rarely visited and unsafe.

URBAN STRATEGY:
Strategic green areas

Urban green areas and conservation zones must be seen as environmental resources with strategic uses, and as regional mechanisms for the mitigation of risks for both the urban community and to the city in which it is built. To ensure an adequate relationship between urban development and the natural environment, the planning of an urban community must:

A. Consult the corresponding region's Risk Atlas to establish an appropriate urban development strategy, and if no Atlas exists, perform an equivalent environmental impact study for the project's area.

B. Preserve natural areas of sufficient size to provide environmental services, or for their use as recreational spaces or natural scenery.

To leverage green areas or conservation zones to their fullest potential, it is suggested to complement their creation with the following recommendations:

A. Ensure there are at least two trees (with a minimum height of 1.08) for every residence.

B. Incorporate a low-impact space use that is congruent with its properties and its context (zoo, museum, jogging track, eco-tourism facilities).

C. Allow entry to the general public, although controlled, and prioritize access for non-motorized means of mobility.

INTER-NEIGHBORHOOD STRATEGY: ENERGY, WATER AND WASTE EFFICIENCY

To provide a sustainable base for the natural environment and the natural resources of the community and its surroundings, the urban community must use its energy, water, and waste resources efficiently. At a neighborhood level, the following must be attempted:

A. At least 70% of public lighting must have energy-saving bulbs.

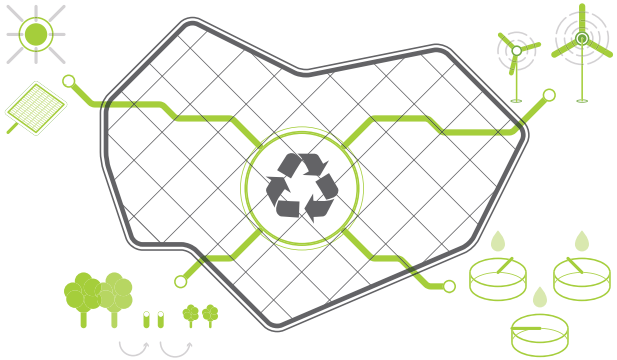
B. Al least 80% of the green-area surface must be permeable, so the aquifers can be replenished.

C. At least 90% of irrigation water must be obtained from recovery or rainwater storage, or must come from a waste water treatment plant.

D. 100% of the community's waste water must be treated within the area, or in a nearby waste water treatment plant.

E. There must be collection facilities and vehicles that allow for the separation of solid waste, along with a waste management community program (separation and recycling).

The efficient use of resources reflects both the initial planning of a sustainable urban community and the design



and operation of the built environment. To achieve improved savings in energy, water and waste management, the following is suggested:

A. Use of local materials for its construction and maintenance.

B. Optimal use of space by promoting vertical residences, and by taking advantage of existing structures (renovations).

C. Tree planting in green areas with local vegetation, as they usually require low maintenance and little irrigation water.

D. Creation of community composting centers to use the fertilizer produced in the maintenance of green areas and/or generation of local employment.

E. Use of funds obtained from the sale of recyclable waste to improve the community, while keeping the neighbors up-to-date on the recovered amounts.

F. Design public lighting for pedestrians and not for automobiles (See 3.4 Pedestrian-street interaction), as it reduces maintenance costs and power consumption.

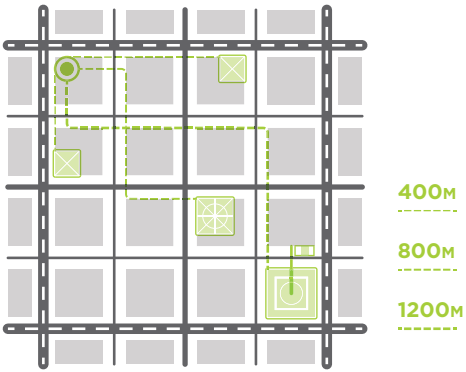
NEIGHBORHOOD STRATEGY: PUBLIC SPACE NETWORKS

With the objective of creating public spaces that are planned as part of an interconnected system of spaces, access to a variety of open consolidated spaces with different types and sizes from any point within the urban community should be provided. It is important to at least comply with the following:

A. A neighborhood garden that is, at most, a 400 meter walking or bicycle trip.

B. A neighborhood park that is, at most, an 800 meter walking or bicycle trip.

C. A public sports venue that is, at most, a 1,200 meter walking or bicycle trip.



Since the success of a public space network does not depend exclusively on its creation, it is recommended that the following be considered:

A. Create community public spaces, especially in cases where the residences lack open spaces.

B. Connect the public spaces with each other and with the neighborhood's primary leisure spaces, through a system of sidewalks, bike paths or pedestrian/cycling paths (See 3.2 Create pedestrian and cycling networks).

C. Coordinate public space activities with adjacent commercial and public facilities (See 3.5 Active ground-floors).

ROAD STRATEGY: PUBLIC LIFE

To guarantee that built public spaces maintain continuous use, promote diverse social interactions, and provide a strong sense of purpose and identity, public spaces must provide at least ten different types of activities[1]:

A. Necessary activities, which are performed daily as a necessity and do not depend on the climate or physical context.

B. Optional activities, which are performed for pleasure, during free time, and for recreational purposes. They are strongly dependent on climate and the quality of the physical context.

To aid in the creation or renovation of a public space, it is recommended that Studies of Public Space and Public

Life (EPVP) be performed[2] to assess potential use, character and quality.

The appeal of the various activities offered by a public space depends on several urban environmental factors. Some of the most relevant suggestions are:

A. Plan for paths, bicycle racks and public transit stops to ease accessibility to these spaces through sustainable mobility methods (See 3.1 Access to public transit, 3.2 Sidewalks and bike paths).

B. Design adjacent roads under "traffic-calming" strategies (See 3.3 Road safety).

C. Provide adequate lighting (See 3.4 Pedestrian-street interaction).

D. Plan connections between public and private spaces, especially with commercial and public facilities (See 3.5 Public-private transition).

E. Design and build the spaces with high-quality materials, interesting details, pleasant views and sensory experiences.

F. Provide protection against the elements.

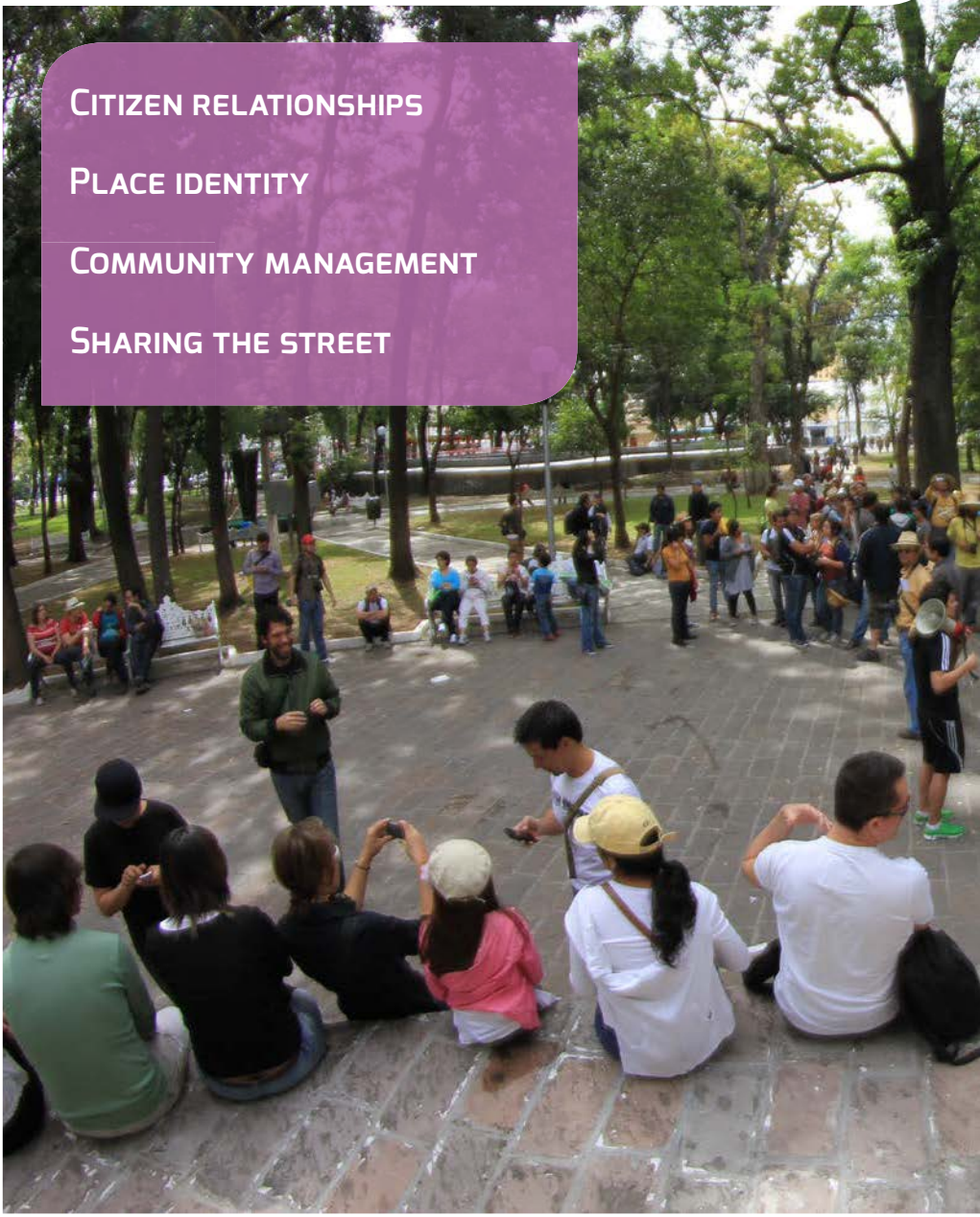
G. Provide seating and meeting spaces.

To create public spaces that provide a safe public life and environment in the long-term, it is essential to plan their maintenance. In other words, to generate a sustainable financial and management scheme (private, public, semi-public or self-managed).

1 Project for Public Spaces (PPS), A guide to Neighborhood Placemaking in Chicago, 2008, Chicago. Jan Gehl, Cities for People, Island Press, 2010, Washington.

2 CTS Mexico. Manual de Espacio Público y Vida Pública (EPVP), 2010, Mexico.

3.7 Community involvement and identity



- Citizen relationships
- Place identity
- Community management
- Sharing the street

The objective of encouraging community involvement is to build a social fabric with neighborhood identity and integration, and to promote safe and fair environments. When community involvement is promoted, the goal is to bring together the various populations that share a territory, and to promote harmonious living. The creation of community identity results in greater involvement of its residents in civic, cultural and economic activities. This generates a sense of belonging, which contributes to the public life and care of the place they live in.

The various community involvement processes provide valuable information channels for the conceptualization, operation and maintenance of an urban project during any of its phases. To plan for them is to acquire expertise on the citizens in all their capacities - resident, politician, entrepreneur, academic, which aids in further understanding and responding to the new social, economic, environmental and urban realities faced. In addition, because of their involvement in decision-making, they contribute to the acceptance and valuing of their community.

In addition, the creation and encouragement of public life and identity for the place allow all users of the urban community to understand how they fit in the urban space, actively occupy, own, manage, transform, and continuously maintain it.

Lack of adequate communication channels with local authorities

Denial and lack of leveraging of the natural identity of the location

Lack of community organization to support and promote neighborhood initiatives

Shared living and community expression in desolate and unsafe spaces

Any urban project implies the participation of many players who sustain it: the real-estate developer, local authorities, private companies, civic groups, residents, and credit institutions, among others. Resident involvement is particularly important in the construction and maintenance of the urban community, as it directly impacts their day-to-day life. Generally, the resident ends-up being the greatest expert on the place where an urban project is developed.

In addition to actively ignoring the residents, current urban development patterns fail to offer spaces for expression, sharing, development and conservation (both tangible and intangible), where all community members have the right to exercise their citizenship.

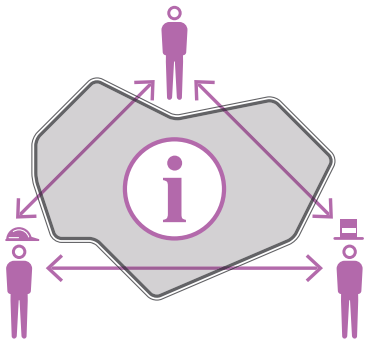
The reality of current urban development in Mexico is that it tends to disregard the citizens' opinions on urban construction and renewal. However, there are many examples where the residents have organized themselves, and have taken ownership of spaces to improve them or give them new uses. So, there is a great opportunity to promote community involvement in all its forms, and in particular, for urban development projects, as the quality of the immediate environment has always been of public interest.

URBAN STRATEGY:
CITIZEN RELATIONSHIPS

To build a social fabric that integrates the city's socio-political dynamics results in the creation of relationships among the different players in the urban community, through information and consensus-seeking with citizens (residents, users, etc.) of the urban community. First, the information must:

A. Contain technical, educational or conceptual components for any urban project or enterprise.
B. Invite citizens to get involved in consultations and public workshops.
C. Be valid, current and active during the various project and operations stages of the sustainable urban community.
D. Be available through different media (meetings, posters, pamphlets, website) that allow open access.

Second, to ensure a continuously open communications channel with citizens, it is recommended that consensus be sought with at least:



A. Local authorities, particularly during diagnosis.
B. Experts in pertinent subjects, in particular for proposals and projects.
C. Residents of the urban community, specifically focused on their needs and expectations during the implementation of activities.

These consultations are carried-out through proven methods (field visits, workgroups divided by subject, satisfaction surveys, public meetings, exhibitions, participatory workshops), whose use varies based on the demographic properties of the groups to be consulted, and whose impact assessment is sought.

INTER-NEIGHBORHOOD STRATEGY: PLACE IDENTITY

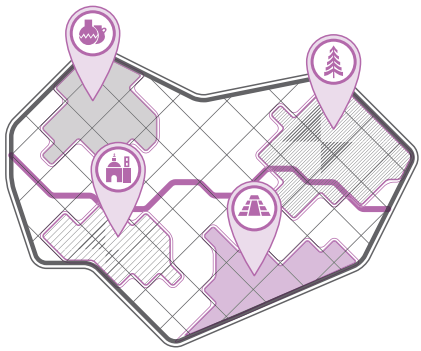
With the goal of encouraging a sense of belonging among the residents, it is essential to preserve the integrity of local items that are particular to the urban community and provide it with its own identity. These items may belong to at least one of the following types of assets:

A. Environment: rivers, cliffs, agricultural lands, forests, regional fauna and flora, etc. Natural areas are protected for the capturing of CO_2, aquifer replenishment, maintenance of biodiversity and prevention natural disasters. Inasmuch as possible, it must be sought that these places be valued as recreational spaces for the residents (See 3.6 Strategic green areas).

B. Historical: heritage buildings, churches, monuments, old factories, ranches, farms. Tangible historical components of an area are preserved to keep the place's history alive, for their collective use, and for their care.

C. Cultural: festivals, processions, markets). The uses and customs of nearby communities are studied to provide the places and facilities needed for the performance of these activities.

D. Architectural: buildings of character, construction techniques, existing buildings. For the design of prototypes, the properties of regional architecture must be considered: dimensions, construction materials, façade colors, among others.



It is commonly heard that a particular territory lacks heritage value, or that it is more efficient to ignore a place's pre-existing conditions. However, this ignores the potential for creating cultural, social and environmental identity in a sustainable urban community. To take advantage of this, it is suggested to restore, along with the relevant authorities, some of the following:

A. Local flora and fauna, introducing local endemic species to green areas.

B. Archeological or heritage sites, and their best use as cultural and leisure spaces.

C. Local or regional traditions that are no longer practiced, incorporating them into daily community cultural activities.

D. Pre-existing buildings within the urban community's limits, as well as those that have fallen into disrepair for other reasons.

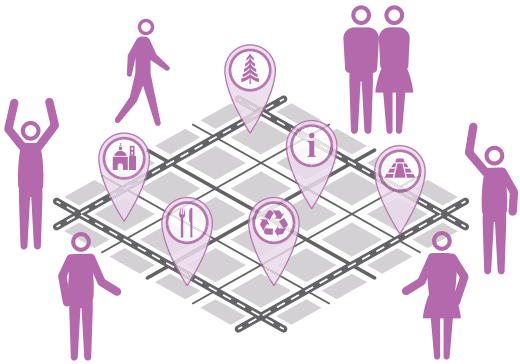
NEIGHBORHOOD STRATEGY: COMMUNITY MANAGEMENT

To guarantee the continuous and sustainable maintenance of an urban community, it is recommended to plan the creation of a neighborhood association, along with the mechanisms that ensure the preservation and improvement of the built environment. From the start, the following should be encouraged:

A. The dissemination of a set of rules that help neighborhood residents understand how the neighborhood works, the sustainable use of facilities, and the expected respect for public and private spaces.

B. Resident associations, through the creation of neighborhood committees at various scales (private, by block, by neighborhood), general assemblies and owners' associations.

C. The construction of public spaces conceived under the PRINCIPLE OF PASSIVE SUPERVISION, easy and economical maintenance.



To prevent the creation of a management body that is ineffective or inefficient, it is suggested that the management of the sustainable urban community be complemented with:

A. A certified person who is in charge of the management of the neighborhood organization (e.g. the "Neighborhood Promoter", assigned by INFONAVIT for residential developments that include program participants).

B. Courses and information workshops, training and community action by the neighborhood organization (SEE 3.7 SHARING THE STREET).

C. Generation of local employment, which would perform the maintenance of the built environment, organization of cultural or community activities, among other community employment activities (SEE 3.5 LOCAL ECONOMY).

ROAD STRATEGY:
SHARING THE STREET

With the objective of achieving neighborhood integration at the smallest of scales, we must attempt to make the streets active places, where various shared-living programs are carried out. This makes the street a true participatory public space, for solidarity, leisure and learning, and not only a place where automobiles circulate. Some of the programs that can be implemented are:

A. Inter-generational collaboration systems.

B. Sunday food fairs and walks.

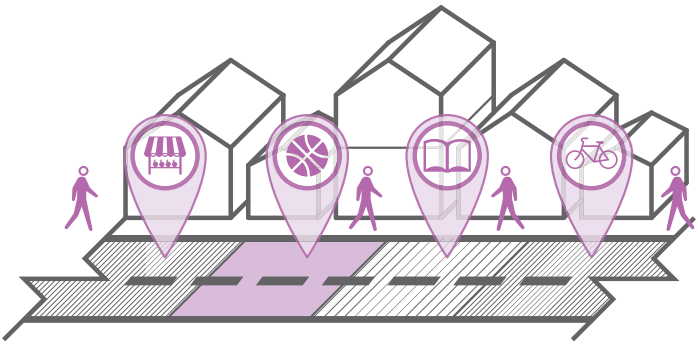
C. Continued education workshops and courses.

D. Spaces for the resolution of issues among neighbors.

E. Games or temporary events (streets for playing).

F. Promotion of non-motorized mobility (RECREATIONAL ROAD).

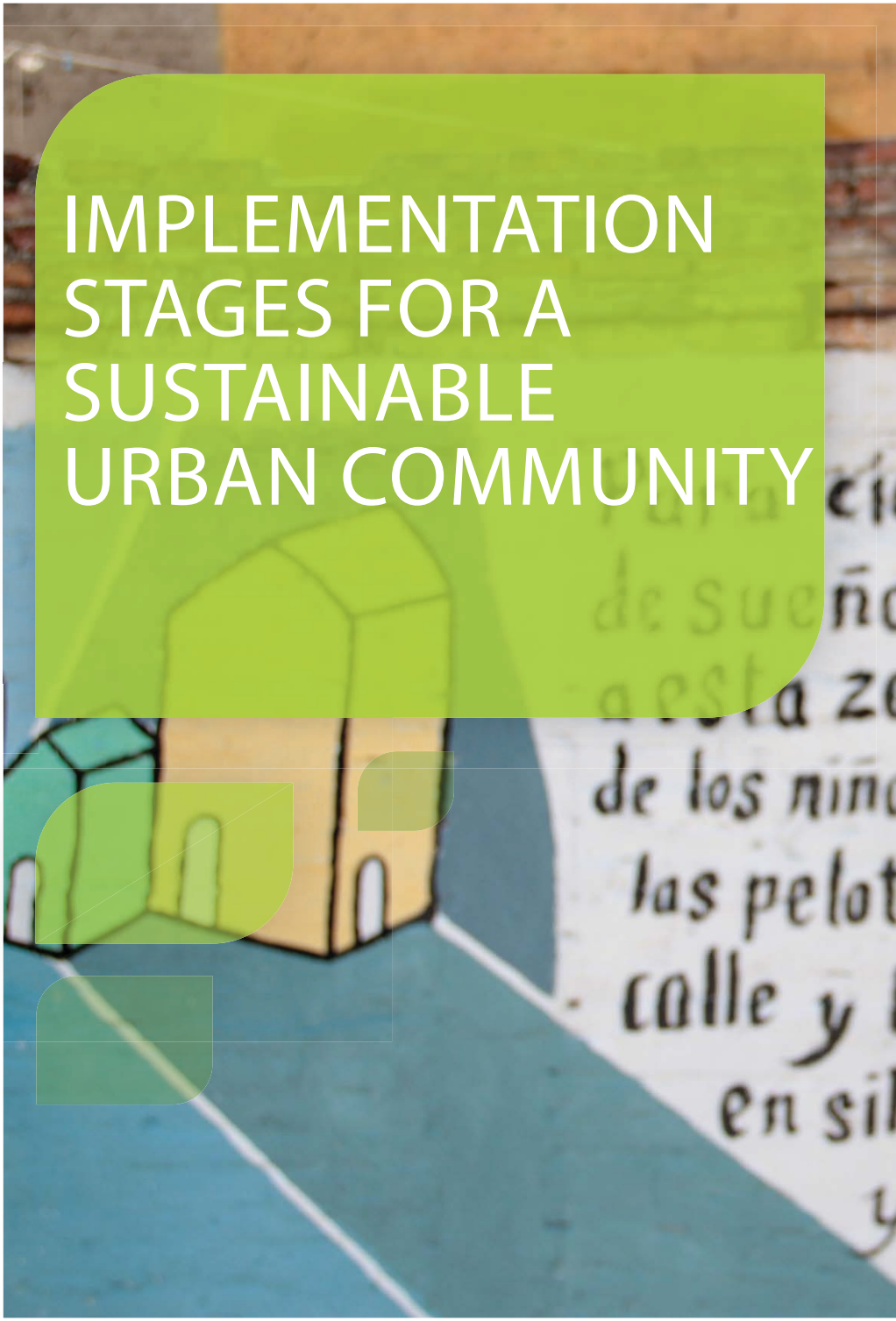
G. Activities for the collective design, improvement and transformation of the public space (clean-ups, murals, community gardens, bike rides).



To perform these activities on the streets, the following are suggested:

A. Enlist one or several persons who are qualified, certified or professionals who can lead the activities and those who volunteer.

B. Enter partnerships with existing civic organizations and municipal authorities for the implementation of healthy public policies.



IMPLEMENTATION STAGES FOR A SUSTAINABLE URBAN COMMUNITY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The steps to be followed for the implementation of this DOTS® Guide for Urban Communities is a result of the path currently undertaken by government authorities, private real-estate developers and private initiatives, civil society organizations, and Mexican urban-development decision-makers. It is important to highlight that the stages described in this document involve several players who are involved in the processes that lead to a sustainable urban community. In some cases, those in charge of carrying-out each stage come from the country's private and public sectors, and their success depends on how they collaborate and the approach they take.

The implementation stages that are described in this document are based on the "DOTS® Step by Step" methodology from the DOTS® Manual, and should be considered an extension of those steps, with specifications that are adapted to the construction of urban communities (on occasion, inserted or comprised of several DOTS® neighborhoods) and contextualized to the common realities found in Mexican cities.

The objective of this chapter is not only to describe the general aspects of the construction of an urban community, but to recommend how to encourage these processes. In addition, it provides suggestions for the sequencing of implementation for each of the 28 urban design strategies from the DOTS® Guide for Urban Communities.

4.1 Identification of opportunities

The process to identify opportunities for the implementation of a sustainable urban community is by definition a function of the public policies described in planning documents at national, state and municipal levels. To analyze the viability of urbanizing a specific space, the spatial and strategic (as it relates to the territory) location of the area of intervention where the urban community is to be located must be identified. At this point, it is important to consider at this point its location with respect to the urban footprint and conservation areas of the city or metro area:

1. 3.1 Quality public transit Proximity to the urban footprint
2. 3.6 Public spaces and natural resources Strategic green areas

However, prior to the start of any legal, judicial or administrative process, the various urban development opportunities must be considered:

A. New urban development. It refers to urban communities to be built on vacant or abandoned lands within a city or on its immediate periphery, and which are classified or zoned as "urban" or "urbanizable" lands in the Urban Development Plan (PDU) of the Municipality or corresponding jurisdiction. In most cases, the area is considered urban when it is located within or adjacent to the city's urban footprint.

B. Existing urban development or urban renewal. It refers to pre-existing urban communities within a city, whose spaces have fallen into disrepair and require a comprehensive physical transformation and improvement program. In some cases, these areas may have already been identified by a Population Center Plan, Metropolitan Area Plan, Partial Urban Development Plan.

It is important to acknowledge that the opportune moment for urban development in Mexico is always linked to political timeframes, political will, government agenda priorities and economic, social and political viability.

4.2 Context definition

The definition of a sustainable urban community project serves to both understand the contextual and physical limitations of the area to be intervened, as well as to understand the barriers presented by the regulatory framework and what is established by current planning mechanisms (specifically, the Population Center Plan), at a smaller scale:

- Primary and secondary zoning
  - Types, changes and mixes of space usage
  - The allowed densities and intensities of space usage
  - The primary risk areas
- The classification of areas and urbanization stages
  - Short term
  - Medium term
  - Long term
- The urban structure
  - Regional and primary road networks
  - Neighborhoods and population centers

As part of a global action and local impact philosophy, it is important to analyze, act and subsequently estimate the impact of the project at various scales. It is essential that the analysis of the built and to-be-built context identifies the existing road layout, the allowable densities, and the existing neighborhood centers:

1. 3.1 Quality public transit: Viability of public transit
2. 3.2 Non-motorized mobility: Continuation of the road layout
3. 3.5 Neighborhood centers and active ground-floors: Neighborhood centers

In addition, this stage can be used to identify the incentives, subsidies or financial programs available at the demand and supply levels for housing, at the three levels of government, and the opportunities that may arise from private initiatives.

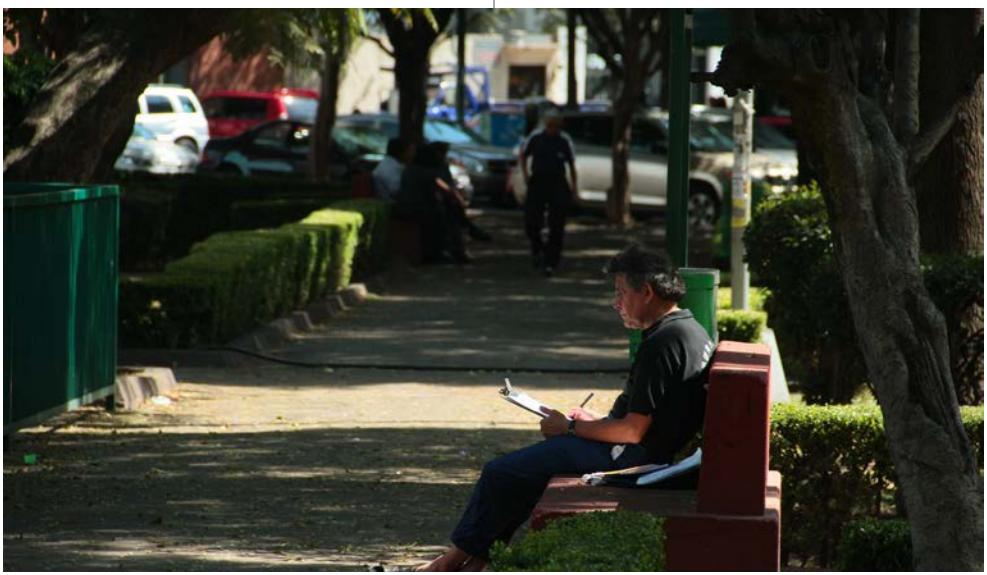
4.3 Vision and specific-goals statement

Starting with the diagnosis of the general context that comprises the urban community, a specific vision for the project must be defined. That is, the level of ambition expected for the project. A way to express this vision is to define the degree of compliance with the urban design strategies proposed by the DOTS® Guide for Urban Communities, which can be used for compliance with mandatory national standards, or the attainment of a certification level of one of the systems mentioned in this document (BREEAM Communities, One Planet Communities, LEED for Neighborhood Development, Sustainable Comprehensive Urban Developments, among others) (See Appendix: Systems for the assessment of sustainable urban development).

To establish specific goals and to be able to subsequently assess whether the project complies with the expectations proposed at the start, it is recommended that sustainability indicators be used, such as (ISV) or the DOTS® indicators (See Appendix: DOTS indicators for the assessment of projects).

However, the urban community project may aspire, from the start, to attain goals that are directly related to the design strategies established by the Guide. For instance, a sustainable urban community may have the goal of minimizing the use of automobiles and long trip distances; become points of attraction for economic activity or be highly competitive; or, encourage the identity of the place through the conservation of assets.

1. 3.3 Automobile usage management Optimization of daily commutes
2. 3.5 Neighborhood centers and active ground-floors:Local economy



4.4 Regulatory and urban diagnosis

To develop a sustainable urban community project, it must be consistent with a Partial Urban or Urbanization Development Plan. Following the identification of planning tools that affect the project, the legal viability of building (or re-building) the urban community must be reviewed; and the regulations, codes and other regulatory directives that apply must also be reviewed.

It is important to stress this review process, as there is a possibility that a particular design goal or strategy might be inconsistent with the current legal, judicial regulatory or planning frameworks. In this case, it is recommended to follow the methodologies proposed by CTS EMBARQ Mexico through its DOTS® kit (See Presentation: DOTS Kit), comprehensive workshops and specific aids to incorporate the urban design strategies that are critical to the corresponding regulatory framework.

The studies needed to comply with the diagnosis required by the Partial Program must be carried out in parallel. It is also suggested that the studied zone be extended to at least 6 kilometers from the borders of the sustained urban community project. The studies to be performed are:

- Natural physical environment
  - Geographic and climate conditions
  - Ecological conservation zones
  - Endemic flora and fauna
- Built physical environment
  - Existing infrastructure
  - Viability of urban services
  - Built facilities and their capacity
- Economic and social situation
  - Socio-economic profiles
  - Community profile
  - Employment centers
- Urban mobility
  - Existing public, private and freight transportation
  - Road infrastructure analysis
  - Origin-destination survey

The context is identified with the information collected, as well as the particular issues surrounding the sustainable urban community project; so the following urban design strategies can begin to be established:

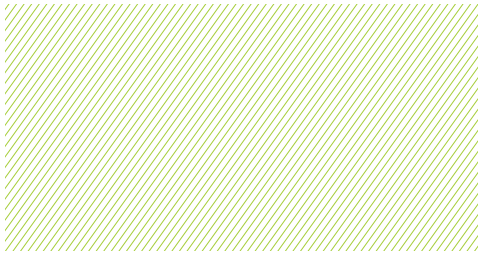
1. 3.7 Community involvement and identity: Citizen relationships
2. 3.6 Public spaces and natural resources: Energy, water and waste efficiency
3. 3.4 Mixed-use and efficient buildings: Regional facilities
4. 3.7 Community involvement and identity: Place identity

4.5 Incorporation of design strategies

Following the development of the Partial Program, the various players and decision-makers involved in the construction of the sustainable urban community must undertake a series of processes to cover approach, definition, drafting, review, feedback and consolidation of the urban design solutions to be implemented. In general, this involves the effort of small work teams, whose abilities and expertise are given by their specific specialization areas.

In addition to generating fragmented production chains, the design of an urban community typically follows a linear process that starts with the layout, and is followed by the preparation of lots and the placement of residential prototypes, which are often pre-designed.

The nature of the urban design strategies of the DOTS® Guide for Urban Communities is not easily compatible with a linear operation and requires both multi-disciplinary teams, as well as workshop sessions where the primary community players are involved: design leaders, those in charge of costs, construction, project supervision, sales personnel, and organizations, experts, authorities and local or neighboring communities, as required by required the situation.



It is during this stage that the majority of the DOTS® urban design strategies can be conceptualized and defined, at a proposal scale:

1. 3.1 Quality public transit: Access to public transit
2. 3.3 Automobile use management: Safe and orderly roads
3. 3.4 Mixed-use and efficient buildings: Neighborhood facilities and retail
4. 3.2 Non-motorized mobility: Pedestrian and cycling networks
5. 3.6 Public spaces and natural resources: Public space networks
6. 3.2 Non-motorized mobility: Internal connectivity
7. 3.3 Automobile use management: Parking management

And at a project execution scale:

1. 3.1 Quality public transit: Public transit infrastructure
2. 3.2 Non-motorized mobility: Sidewalks and bike paths
3. 3.3 Automobile use management: Road safety
4. 3.4 Mixed-use and efficient buildings: Efficient buildings
5. 3.5 Neighborhood centers and active ground-floors: Active ground-floors
6. 3.5 Neighborhood centers and active ground-floors: Public-private transition
7. 3.4 Mixed-use and efficient buildings: Pedestrian-street integration

Following the workshops or work sessions, a permanent communications channel must be established between the government bodies and private groups, with the objective of jointly reviewing and modifying the master plan.

4.6 Implementation and follow-up

The constant supervision of the sustainable urban community project, from its design to its final construction, is essential to achieving the vision and the success of the DOTS® urban design strategies. Managing the implementation consists of:

- Monitoring the pace of progress as it relates to the initial plans, and is consistent with criteria from the DOTS® Guide for Urban Communities;
- Consider the impact of the project's construction process and the disturbances it may cause (visual, light, noise, environmental pollution and waste, traffic generation, etc.), by developing mitigation and control strategies for highly demanding projects, which are necessary for the project's good standing with the community;
- Preparing the subsequent project commercialization phase by developing tools that ensure both the maintenance of the community by the municipality or a company, as well as the education of residents and users on the behaviors necessary to have an urban community where a sustainability culture prevails.

Unless it is a completely new urban community (that is, with no residents during the previous stages), contact with residents must start early in stage 4.3 Vision and specific-goals statement. However, being conscious that the community involvement process can be carried-out in parallel, and depending on the case, the implementation of the following strategies is suggested for this stage:

1. 3.7 Community involvement and identity: Community management
2. 3.6 Public spaces and natural resources: Public life

4.7 Assessment and improvements

Once the sustainable urban community is built and occupied, the level of compliance with the initial project vision and goals must be assessed, and methodologies must be established to follow-up on the changes generated in the population - of the acceptance levels and sense of ownership of its residents and users - for the medium and long terms.

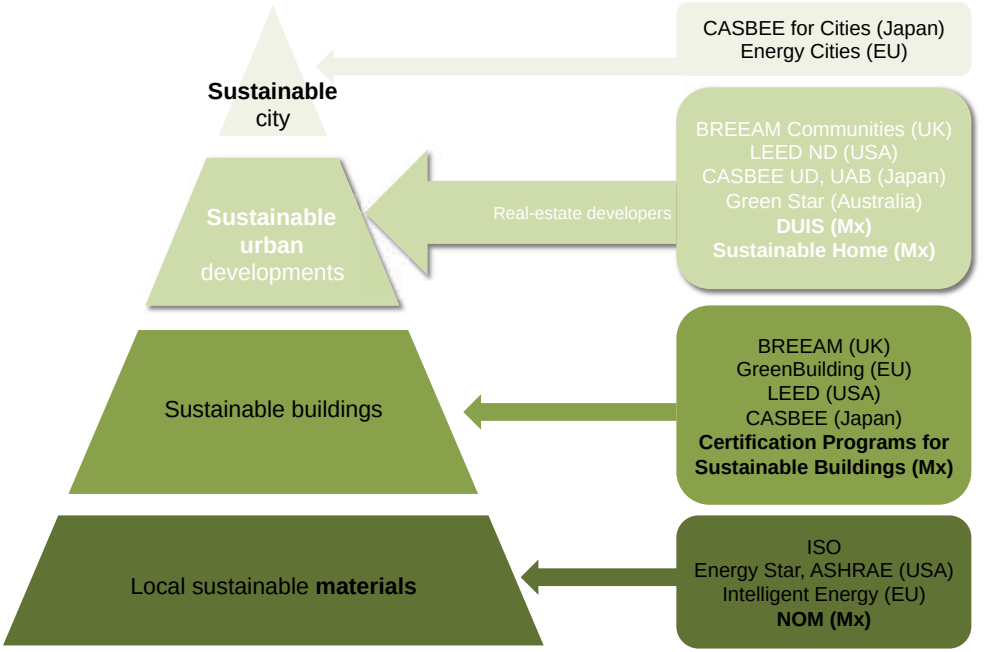
To achieve this, the same indicators used in 4.3 Vision and specific-goals statement can be used to make follow-up assessments; or tools can be used, such as Public Space and Public Life Studies developed by CTS EMBARQ Mexico in 2010, to assess the various aspects of urban quality of life for the community created. It is recommended to always share these assessment results with local authorities, so the indicators can continue to be monitored in the following years.

On the other hand, the results obtained from these assessments can be used both to find opportunities for improvement in the process of implementation of DOTS® urban design strategies, as well as to assess how to capitalize on the value added generated by the sustainable urban community.

This final assessment can also be used to reflect on the quality of the cooperation among the different players who took part, directly or indirectly, in the project. The conclusions are useful to educate all those involved in future sustainable urban design projects.

APPENDICES

Systems for the assessment of sustainable urban development



Pyramid of international certification services. Currently there are more quality certifications systems available for low pollutants and energy efficiency for materials and buildings than there are for certifications focused on urban and city development.

The DOTS® Guide for Urban Communities is the result of one year of research on national and international standards for the construction of sustainable urban neighborhoods. The primary goal of the project was to adapt urban design criteria, and to compare them to the DOTS® model from CTS EMBARQ Mexico and to the practical experience gained from its implementation in residential developments and changes to urban regulations. In this manner, the technical contents of this Guide do not exist in a vacuum and are not developed from scratch. They acknowledge the vast universe of efforts that have sought to establish design criteria and urban sustainability.

In the past decade, systems for the assessment of sustainable construction have been developed from civil society initiatives, in particular in the English-speaking world. Their goal is to reduce the environmental impact of buildings through the assessment of architectural design and the use of eco-technologies. After several years of operation, it was shown that the certified buildings that were built were still responsible for significant energy expenditures and for greenhouse gas emissions, because of the urban pattern in which they were applied. The placement of buildings in the suburban periphery of cities, for example, creates trips that become longer and longer, encourages the use of the automobile, and increases costs for both the user and the local governments.[1]

This type of finding resulted in a new generation of assessment systems that focus on the measurement of a larger environmental impact scale of the building's surroundings. The ultimate goal of these systems continues to be the encouragement of implementation of good practices in energy savings, optimum use of construction materials, and also improvements in planning and urban design. The primary objective of these certificates is always to guide and transform the market toward a comprehensive sustainability in the medium term. This voluntary measurement and certification process stimulates the private sector to begin to generate value-added, and on the other hand, local public authorities to ensure the well-being of residents. In general terms, the sustainable neighborhood assessment and certification systems that have succeeded have taken into account the regulatory and market contexts to make them appealing to the actors responsible for the construction of urban developments.

The following is a summary of the design criteria from the BREEAM Communities system (England), One Planet Communities (England), LEED for Neighborhood Development (United States), Comprehensive Sustainable Urban Developments (Mexico) and Complete Life INFONAVIT: Sustainable Housing (Mexico). These systems were the base for the DOTS® urban design criteria, found in CHAPTER 3 of this Guide.

1 CTS México, Hacia Ciudades Competitivas Bajas en Carbono C2C2, Reporte Final. 2009, Mexico, p. 162.

Step 1	Step 2	Step 3
Governance		
GO01 – Consultation plan	GO02 – Consultation and engagement GO03 – Design review	GO04 – Community management of facilities
Social and economic wellbeing		
SE01 – Economic impact SE02 – Local demographic survey SE03 – Flood Risk Assessment SE04 – Noise pollution	SE05 – Housing provision SE06 – Delivery of services, facilities and amenities SE07 – Public realm SE08 – Microclimate SE09 – Utilities SE10 – Adapting to climate change SE11 – Green infrastructure SE12 – Local parking SE13 – Flood risk management	SE14 – Local vernacular SE15 – Inclusive Design SE16 – Light pollution SE17 – Labour and skills
Resources and energy		
RE01 – Energy strategy RE02 – Existing buildings and infrastructure RE03 - Water strategy		RE04 – Sustainable buildings RE05 – Low impact materials RE06 – Resource efficiency RE07 – Transport carbon emissions
Land use and ecology		
LE01 – Ecology strategy LE02 – Land use	LE03 – Water pollution LE04 – Enhancement of ecological value LE05 – Landscape	LE06 – Rainwater harvesting
Transport and movement		
TM01 – Transport assessment	TM02 – Safe and appealing streets TM03 – Cycling network TM04 – Access to public transport	TM05 – Cycling facilities TM06 – Public transport facilities

BREEAM Communities, is the first sustainable urban development certificate in the world

http://www.breeam.org/

The British system, Building Research Establishment Environmental Assessment Method (BREEAM) is the oldest sustainable construction standard (1990). Since 2008, BREEAM has incorporated the most recent certification system for a "set of buildings" scale. So, BREEAM Communities aids developers by independently measuring and certifying the sustainable nature of their real-estate projects at a neighborhood level. The BREEAM Communities certification can also be used by local authorities as a requirement to ensure that new developments carried-out within current local urban planning are designed and built to provide high-quality urban life, a vibrant immediate environment, and that they are safe and kind.

The assessment is based on 3 scales that correspond to 3 work stages: first, it must be proven that the project meets local requirements and opportunities for sustainability improvements are identified; second, the project master plan is designed and the specific objectives to be achieved are established; and third, the project details are designed at a neighborhood and building scale. The requirements, as well as the financing, are organized into six categories by subject: Governance (GO), Socio-economic well-being (SE), Resources and Energy (RE), Use of land and ecology (LE), Transportation and movement (TM), Innovation (Inn). The projects are certified with one of five possible grades ("Pass", "Good", "Very Good", "Excellent", "Outstanding") and with the unique requirement that neighborhood or set of buildings has a significant positive impact on its surroundings.

BREEAM Communities References

1. Quality public transit

NEIGHBORHOOD STRATEGY: Access to public transit

The accessibility to public transit is evaluated based on the context in which the project is inserted, and through pedestrian trips from any building entrance to a transportation node: a maximum of 650 meters and in the best of cases, 350 meters.

TM 04. Access to public transport. p.131.

ROAD STRATEGY: Public transit infrastructure

Consultations must be carried out with local authorities, the developer, community representatives and public transit providers to establish the facility requirements to be considered at the planning and design stages. At a minimum, shelters must be provided:

1. At public transit stops, particularly those close to community points of interest;
2. Of an appropriate size for users of various ages and abilities;
3. Protected from climate conditions, vehicular traffic and the sun;
4. Safe and comfortable;
5. Visible from the immediate surroundings and from the community;
6. Without any obstacles for pedestrians and cyclists;
7. With current information on the route;
8. With enough seating space for all types of users within the development;
9. With at least the minimum required urban furniture to allow access to the stop; and
10. With parking to allow for multi-modal transfers.

TM 06. Public transport facilities. p.164.

2. Non-motorized mobility

URBAN STRATEGY: Continuity of the road layout

It is recommended that all existing streets outside the area be continued within the project.

TM 02. Safe and appealing streets. p.125.

INTER-NEIGHBORHOOD STRATEGY: Pedestrian and cycling networks

Streets must connect to residential areas and points of interest within and outside the community. Also bike paths that are direct and safe must be provided.

TM 02. Safe and appealing streets. p.125. TM 03. Cycling network. p.129.

ROAD STRATEGY: Sidewalks and bike paths

Regarding pedestrian infrastructure, the following is required:

1. All the streets and public spaces must be in front of multi-family units; and,
2. All the access points and streets that cross the area must be well-lit, be direct, and must provide views.

TM 02. Safe and appealing streets. p.125.

Regarding pedestrian infrastructure, the following is proposed:

1. For roads with speeds below 30 km/h, cyclists share the roads with motorized vehicles;
2. For primary roads, bike paths must be clearly defined;
3. Segregated bike paths are needed when there is enough space, in particular, when the traffic speeds exceed 50 km/h;
4. Pedestrians and cyclists may share the same space, but must be segregated by an elevated curb or clear road signaling; and,
5. Cyclists must have appropriate signaling and road information to aid their navigation within and outside the development.

TM 03. Cycling network. P. 129.

3. Vehicle Demand management

URBAN STRATEGY: Optimization of daily commutes

In terms of employment, an economic study is required to identify the economic needs and opportunities for the location's future residents. At least 10% of those employed by the development's construction must be local, the study must include an analysis of local competencies, and the developer must commit to employing at least 50% of the labor needed for maintenance and operations after the development's construction. In the best of cases, the developer partners with a provider to offer training opportunities for local residents. This includes opportunities to attract and negotiate local or regional strategic investments to the project.

SE01. Economic impact. P. 39. SE 17. Labour and skills. p.145.

INTER-NEIGHBORHOOD STRATEGY: Safe and orderly roads

An assessment is performed of a traffic management plan, which has as its objective the reduction of traffic. This plan must be approved by local authorities, road design authorities or the police.

TM 02. Safe and appealing streets. p.125.

NEIGHBORHOOD STRATEGY: Parking management

A consultation with the authority, the developer, community representatives and other players involved in the project must be prioritized to determine the appropriate number of parking spaces needed for the development. Parking facilities are integrated into the development, without allowing for their dominance or interference with cyclists, pedestrians or vehicular traffic. When appropriate, residential parking facilities must be located below or behind the building.

SE 12. Local parking. p.108.

ROAD STRATEGY: Road safety

Road safety is assessed through the walkability of streets, and it establishes that:

1. All the access points and streets that cross the area must be well-lit, be direct, and must provide views;
2. Pedestrian crossings must be designed to ensure the safety of all their users;
3. Design measures must be incorporated into the master plan to provide safety for the flow of car drivers, cyclists and pedestrians;
4. The areas of vehicular discharge may not be accessible through a parking facility and do not cross or share a pedestrian or cycling path; and
5. Within a traffic management plan for the development, there must be objectives for the reduction of the number of accidents, as approved by local or higher authorities.

TM 02. Safe and appealing streets. p.125.

4. Mixed and Efficient Uses

NEIGHBORHOOD STRATEGY: Neighborhood facilities and commerce

It is requested that a list of local needs be established for a distance that is walkable from all the residences, and it must be part of the master plan and with a time scale that is the result of an agreement with local authorities. The management is responsible for the monitoring and reporting of the process of delivery of these services, and it must learn the requirements of the local community.

SE 06. Delivery of services, facilities and amenities. p.89.

NEIGHBORHOOD STRATEGY: Efficient buildings

Regarding the mix of residences, it is planned that housing be based on local needs and on the strategic assessment of the residential market by the local authorities. Local residents and those displaced by the project must have priority access to low-income housing.

SE05. Housing provision. p.85.

Regarding water and energy management, it is proposed that the developer and the design team commit to designing buildings with sustainable design standards for 1 or more of the following issues: energy, water, waste, materials, health or well-being. In addition, they must commit to an accreditation, such as Code for Sustainable Homes or BREEAM to measure the sustainability levels of all the buildings designed and built for the project.

RE 03. Water strategy. p.64. RE 04. Sustainable buildings. p.147.

5. Urban centers and Active ground-floors

URBAN STRATEGY: Local economy

In terms of generation of employment, an economic study is required to identify the economic needs and opportunities for the location and its surroundings. This study must focus on understanding how the developer can contribute to the economic well-being of future residents. It must ensure that the development complements the existing local economy. For developments that are purely residential, this study must identify the employment potential and provide opportunities for future residents. The infrastructure and facilities within the development must contribute to or complement the existing local business.

SE 06. Delivery of services, facilities and amenities. p.89.

INTER-NEIGHBORHOOD STRATEGY: Neighborhood centers

The area surrounding the development must be assessed first, and its main actors must be consulted to define the local context. The following must be considered: construction materials, building colors, architectural style, heights and forms, continuity of styles within and outside the development, and the ability of residents to customize their own homes. Lastly, the subsequent stages are reviewed to determine whether they reinforce the local identity.

SE14 Local vernacular. p.104.

NEIGHBORHOOD STRATEGY: Active ground-floors

The existence of pedestrian routes connecting residential areas to community focus points are required for the development. The community focus points are places with facilities for commercial activity, health, education, sports, public spaces, meeting spaces and transit infrastructure.

TM 02. Safe and appealing streets. p.125.

ROAD STRATEGY: Public-private transition

A mix of uses on the buildings' ground floors is encouraged, which creates vibrant locations through frequent-use activities. Commercial displays must match the street and allow mutual views from inside and outside.

SE 07. Public realm. p.93.

6. Active and safe public spaces

URBAN STRATEGY: Strategic green areas

The following is required:

1. An ecological impact assessment;
2. Environmental strategy (Master Plan, construction, operations) validated by a specialist; and,
3. A mitigation and value-added plan for biodiversity, approved by the appropriate authority.

On the other hand, BREEAM requires that the master plan highlight, at a minimum, the ecological value through the creation of new habitats or the growth of existing ones; that the master plan consider fauna and flora corridors; and that the ecological plans be integrated within the green infrastructure plan to maximize the provision of amenities, the health and well-being of residents, the conservation of assets, the adaptation to climate change, and the aesthetic value of the place's green spaces.

ROAD STRATEGY: Public life

There must be at least one consultation with the local authorities and the potential users of the development to gain an understanding of local activities, customs and identities to be promoted by the public space. The public space must allow several uses for various users of the development, including children, the elderly, and persons with disabilities. Special attention should be given to their safety and comfort. The design of these spaces must take into account the role they play in the connectivity within and through the development. Appropriate levels of signage, signaling, surface treatments, and landscaping must be used to clearly define these areas. Microclimate studies should be considered for the design of social spaces, and the area's local identity be reinforced by the design of public spaces through the incorporation of ideas taken from a community consultation.

SE 07 Public realm. p.60.

7 Community involvement and identity:

URBAN STRATEGY: Citizen relationships

At a minimum, the following is required:

1. The local authorities, members of the local community and interested parties must be identified for the consultation, and there must be a consultation plan;
2. The consultation must happen early in the process;
3. The plan must include a schedule and consultation methods used, identifying those in charge and results, and how the players may contribute, be informed and provide feedback;
4. A design workshop must be performed as part of the consultation process, there must be compromise with the local community and interested parties;
5. An independent multi-disciplinary panel must review the project's design proposal; and
6. As a result of the review of the project's design, improvements must be implemented.

GO01 Consultation Plan. p.2. GO02 Consultation and engagement. p.47. GO03 Design review p.49.

INTER-NEIGHBORHOOD STRATEGY: Place identity

The area surrounding the development must be assessed first, and its main actors must be consulted to define the local context. The following must be considered: construction materials, building colors, architectural style, heights and forms, continuity of styles within and outside the development, and the ability of residents to customize their own homes. Lastly, the subsequent stages are reviewed to determine whether they reinforce the local identity.

SE14 Local vernacular. p.104.

NEIGHBORHOOD STRATEGY: Community management

It is requested that all community facilities be managed from the construction stages until the project's completion. The officer in charge of the community facilities' operations and maintenance must provide training and user manuals, in particular those regarding sustainable design and technologies. In addition, the developer must support a community group to manage the implementation of at least one community facility. The developer may support the creation of a foundation or company for the new community. The local authorities must agree to work and collaborate with the foundation.

GO04 Community management of facilities. P. 102.

Zero carbon		Making buildings more energy efficient and delivering all energy with renewable technologies.
Zero waste		Reducing waste, reusing where possible, and ultimately sending zero waste to landfill.
Sustainable transport		Encouraging low carbon modes of transport to reduce emissions, reducing the need to travel.
Sustainable materials		Using sustainable healthy products, with low embodied energy, sourced locally, made from renewable or waste resources.
Local and sustainable food		Choosing low impact, local, seasonal and organic diets and reducing food waste.
Sustainable water		Using water more efficiently in buildings and in the products we buy; tackling local flooding and water course pollution.
Land use and wildlife		Protecting and restoring biodiversity and natural habitats through appropriate land use and integration into the built environment.
Culture and heritage		Reviving local identity and wisdom; supporting and participating in the arts.
Equity and local economy		Creating bioregional economies that support fair employment, inclusive communities and international fair trade.
Health and happiness		Encouraging active, sociable, meaningful lives to promote good health and well being.

One planet Communities goals

One Planet Communities, searching for a reduction of the environmental footprint

http://www.oneplanetcommunities.org

One Planet Living is a Bio Regional initiative. This is a social enterprise offering sustainable solutions throughout the world, through its locations in North America, China, South Africa, Kenya, Mexico and Australia. It consists of a series of practical projects and strategic partnerships, which prove that life can still occur with a more just distribution of resources throughout the planet. It is divided into four programs, and One Planet Communities is one of them.

This program has as its aim to create a worldwide network of sustainable communities. To determine the sustainability of each project, it uses a tool to measure each person's environmental footprint tool as a base, and it has the objective of reducing it through the following 10 principles:

1. Zero carbon,
2. Zero waste,
3. Sustainable transportation,
4. Sustainable materials,
5. Local sustainable food,
6. Sustainable water,
7. Soil, fauna and flora,
8. Culture and heritage,
9. Just and equitable commerce, and
10. Health and happiness.

These common objectives are not prescriptive, but attempt to provide global guidelines to bring the One Planet Communities program to the appropriate contexts and realities. This flexibility is based on a sustainable vision in which each solution depends on a specific context, and follows a standard certification process. First, an Actions Plan is drafted, containing the strategies to reach the aforementioned objectives, and once approved by the BioRegional team, the implementation process is launched. Follow-ups are performed annually.

One Planet Communities References

4. Mixed and Efficient Uses

> NEIGHBORHOOD STRATEGY: Efficient buildings

Regarding waste management, One Planet Living Communities proposes the prioritization of waste prevention, recycling, compost, and the discarding of waste. In 2020, at least 70% of domestic waste must be collected, recycled, or made into compost fertilizer. The best case scenario would be that no more than 2% of waste is taken to landfills. Objectives must be created by every country to reduce the total amount of waste per person. Construction companies must include an assessment of the waste produced by all the construction and demolition stages. At least 95% of the waste generated must be collected or recycled. Businesses and industries must achieve recycling levels that are even higher than those for residences.

One Planet Living Communities, Zero Waste, P. 8.

7. Community involvement and identity

> ROAD STRATEGY: Sharing the street

One Planet Living encourages the development of a plan to promote the health and happiness of the residents of the community. The projects that belong to the plan use a database line to assess the context, the community and its needs. Some examples of these projects are: support to persons with chronic diseases and with unhealthy lifestyles through the active promotion of non-motorized mobility, ease of access to inter-generational competitions or activities, the promotion of tools and facilities to create a community that benefits the local economy. The satisfaction of residents is monitored annually.

Health and happiness. p.16.

LEED® FOR NEIGHBORHOOD DEVELOPMENT

110 TOTAL POINTS POSSIBLE

SMART LOCATION & LINKAGE — 27 POSSIBLE POINTS

PREREQ 1	Smart Location	REQ
PREREQ 2	Imperiled Species and Ecological Communities	REQ
PREREQ 3	Wetland and Water Body Conservation	REQ
PREREQ 4	Agricultural Land Conservation	REQ
PREREQ 5	Floodplain Avoidance	REQ
CREDIT 1	Preferred Locations	●●●●●●●●●●
CREDIT 2	Brownfield Redevelopment	●●
CREDIT 3	Locations w/ Reduced Automobile Dependence	●●●●●●●
CREDIT 4	Bicycle Network and Storage	●
CREDIT 5	Housing and Jobs Proximity	●●●
CREDIT 6	Steep Slope Protection	●
CREDIT 7	Site Design for Habitat / Wetland & Water Body Conservation	●
CREDIT 8	Restoration of Habitat/Wetlands and Water Bodies	●
CREDIT 9	Long-Term Cnsrvtn. Mgmt. of Habitat/Wetlands & Water Bodies	●

NEIGHBORHOOD PATTERN & DESIGN — 44 POSSIBLE POINTS

PREREQ 1	Walkable Streets	REQ
PREREQ 2	Compact Development	REQ
PREREQ 3	Connected and Open Community	REQ
CREDIT 1	Walkable Streets	●●●●●●●●●●●●
CREDIT 2	Compact Development	●●●●●●●
CREDIT 3	Mixed-Use Neighborhood Centers	●●●●
CREDIT 4	Mixed-Income Diverse Communities	●●●●●●●
CREDIT 5	Reduced Parking Footprint	●
CREDIT 6	Street Network	●●
CREDIT 7	Transit Facilities	●
CREDIT 8	Transportation Demand Management	●●
CREDIT 9	Access to Civic and Public Spaces	●
CREDIT 10	Access to Recreation Facilities	●
CREDIT 11	Visitability and Universal Design	●
CREDIT 12	Community Outreach and Involvement	●●
CREDIT 13	Local Food Production	●
CREDIT 14	Tree-Lined and Shaded Streets	●●
CREDIT 15	Neighborhood Schools	●

GREEN INFRASTRUCTURE & BUILDINGS — 29 POSSIBLE POINTS

PREREQ 1	Certified Green Building	REQ
PREREQ 2	Minimum Building Energy Efficiency	REQ
PREREQ 3	Minimum Building Water Efficiency	REQ
PREREQ 4	Construction Activity Pollution Prevention	REQ
CREDIT 1	Certified Green Buildings	●●●●●
CREDIT 2	Building Energy Efficiency	●●
CREDIT 3	Building Water Efficiency	●
CREDIT 4	Water-Efficient Landscaping	●
CREDIT 5	Existing Building Use	●
CREDIT 6	Historic Resource Preservation and Adaptive Reuse	●
CREDIT 7	Minimized Site Disturbance in Design and Construction	●
CREDIT 8	Stormwater Management	●●●●
CREDIT 9	Heat Island Reduction	●
CREDIT 10	Solar Orientation	●
CREDIT 11	On-Site Renewable Energy Sources	●●●
CREDIT 12	District Heating and Cooling	●●
CREDIT 13	Infrastructure Energy Efficiency	●
CREDIT 14	Wastewater Management	●●
CREDIT 15	Recycled Content in Infrastructure	●
CREDIT 16	Solid Waste Management Infrastructure	●
CREDIT 17	Light Pollution Reduction	●

INNOVATION & DESIGN PROCESS — 6 POSSIBLE POINTS

CREDIT 1	Innovation and Exemplary Performance	●●●●●
CREDIT 2	LEED Accredited Professional	●

REGIONAL PRIORITY CREDIT — 4 POSSIBLE POINTS

CREDIT 1	Regional Priority	●●●●

40–49 POINTS: CERTIFIED 50–59 POINTS: SILVER 60–79 POINTS: GOLD 80+ POINTS: PLATINUM

FOR MORE INFORMATION SEE THE *LEED REFERENCE GUIDE FOR GREEN NEIGHBORHOOD DEVELOPMENT*

LEED for Neighborhood Development, application of new urbanism principles

http://www.usgbc.org

Leadership in Energy and Environmental Design (LEED) is another global reference point when sustainable solutions are sought, along with measureable solutions for building design, construction and maintenance. Part of the "LEED family", the LEED certification system for Neighborhood Development (LEED ND) is the result of a collaboration between the United States Green Building Council (USGBC), the Natural Resources Defense Council (NRDC) and the Congress for the New Urbanism (CNU). This, the first urban development certification in the United States, is based on Smart Growth and New Urbanism principles, including the experience in certification of green buildings brought by the USGBC, as an independent organization.

For LEED ND, the neighborhood is considered a measurement scale, and is defined as a pedestrian radius of 450 meters (5-minute walk). This was established by American urbanist, Douglas Farr. The system comprises 3+2 categories for design criteria, which describe a sustainable community.

- Intelligent location and connections of the development,
- Neighborhood patterns and design,
- Sustainability of infrastructure and buildings,
- Innovation and design processes,
- Regional priorities.

The projects certified can be intra-urban developments as well as peri-urban, but they require two buildings at a minimum. Prior to granting certification with grades of "Certified", "Silver", "Gold" or "Platinum", they must go through two stages: conditional approval (pre-requisites) and the pre-certification of the Master Plan (tallying of the number of credits).

LEED ND References

1. Quality public transit

URBAN STRATEGY: Proximity to the urban footprint

In order to be pre-certified, the project area must meet the requirements of at least 1 of these 4 categories:

1. At least 25% of the area's perimeter must be bordered by lots that are each built to at least 50% of their areas, or 75% as a group;
2. There is transit service at a walkable distance (400 meters) of at least 50% of the residences;
3. It is adjacent to an urban development with at least 77 intersections per km^2 within 800 meters of the project's borders; or
4. It has at least 5 different uses within a walkable distance of 400 meters.

Prerequisite 1. Smart location. pp.1-9.

INTER-NEIGHBORHOOD STRATEGY: Viability of public transit

The following is required for projects with transportation corridors:

1. At least 30 homes per buildable hectare, for residential use and within a pedestrian radius from the public transit stop;
2. At least 18 homes per buildable hectare, for residential use and outside a pedestrian radius from the public transit stop;
3. At least a 0.80 buildable land occupation coefficient (COS) for non-residential uses within a pedestrian radius from the public transit stop; or
4. At least a 0.50 buildable land occupation coefficient (COS) for non-residential uses outside a pedestrian radius from the public transit stop.

Prerequisite 2. Compact Development. p.42.

NEIGHBORHOOD STRATEGY: Access to public transit

Public transit stops within and/or at the project's border are identified in collaboration with public transit organizations, and must be built prior to the construction of 50% of the project's surface.

Credit 7. Transit Facilities. p.64.

ROAD STRATEGY: Public transit infrastructure

A collaboration with public transit organizations is requested for the provision of kiosks, message boards, and/or information on transit routes at each stop.

Credit 7. Transit Facilities. p.64.

2. Non-motorized mobility

URBAN STRATEGY: Continuity of the road layout

It requests that the project have at least one road or one street that is exclusively dedicated to non-motorized transportation, and it must intersect or end at the project's limit at least every 244 meters of its border.

Prerequisite 3. Connected and Open Community. p.44. Credit 6. Street Network. p.62.

INTER-NEIGHBORHOOD STRATEGY: Pedestrian and cycling networks

It requests that the project be designed or be located in a manner that meets at least one of the following requirements:

A. An existing bike-path network of at least a continuous 8 km of length within 400 meters of the project's borders; or,

B. If the project is 100% residential, an existing bike-path network starting within 400 meters of the project's borders, and connecting to a school or an employment center within 5 kilometers from the project's borders; or

C. A bike-path network within 400 meters of the project's borders that connects to at least 10 diverse uses, located within 5 kilometers of the project's borders.

Credit 4. Bicycle Network and Storage. p.29.

NEIGHBORHOOD STRATEGY: Creating a navigable community

It requests that the project have at least 140 intersections per meter^2 (equivalent to 54 intersections per kilometer^2), which results in a block width of 143 m. Ideally, the project has from 300 to more than 400 intersections per meter^2 (from 113 to more than 840 intersections per kilometer^2). All streets and sidewalks considered for this calculation must be of public use, accessible and not closed.

Prerequisite 3. Connected and Open Community. p.44. Credit 6. Street Network. p.62.

ROAD STRATEGY: Sidewalks and bike paths

To make the streets walkable, at a minimum, the following is requested:

1. 15% of façades of streets within and bordering the project must comply with a ratio of 1:3 between the height of the building and the width of the street; and,

2. The sidewalks for 90% of the project's streets must be continuous on both sides, and new sidewalks must have a minimum width of 2.4 m in commercial or mixed use zones and 1.2 m in other zones.

It also establishes the need to provide bicycle parking facilities for new buildings, in the following manner:

A. At least one safe and enclosed parking space for each occupant for 30% of the planned occupancy, but no more than one per residential unit, and at least 1 visitor space for every 10 units; or,

B. For businesses, at least one safe and enclosed space for every job for 10% of the planned employment occupancy. At least one visitor space for every 465 m^2 of commercial space; or

C. For the rest of the buildings, at least 1 safe and enclosed space for every new occupant for 10% of the planned occupancy, and provide at least 1 visitor space for every 930 m^2 of new surface. Provide at least one shower for every development with 100 or more new employees, and at least one additional shower for every 150 new employees.

Credit 4. Bicycle Network and Storage. P. 29.

3. Vehicle Demand Management

URBAN STRATEGY: Optimization of daily commutes

Regarding vehicle demand management, the following is provided:

A. The creation and implementation of a transportation demand management program (TDM) to decrease automobile trips by a minimum of 20% during peak hours and within 3 years of the project's construction;

B. Half-priced transit tickets for at least one year for every new resident of the project within its first three years;

C. A private transportation system that connects the center of the project with a point with better transit services (45 trips per week, 30 trips per weekend). The service must be in full operation when the residences or offices are 20% occupied, and must be guaranteed for 3 years after construction; or,

D. The project is located so that 50% of the residential units lie within 400 meters from a shared vehicle program. The shared vehicle program must start when the project reaches 20% occupancy, and must ensure its services for the first two years following construction.

Credit 8. Transportation Demand Management. p.65.

Regarding the proximity of residences to employment, the following is provided:

A. Projects with low-income housing must be located within 800 m of walkable distance from existing full-time employment, whose quantity is equal or greater than the number of residential units for the project; or,

B. The projects must be located within 800 m of walkable distance from a train, ferry or streetcar stop, and within 800 m of existing employment units whose quantity is over 50% of the number of full-time jobs created by the project.

Credit 5. Housing and Jobs Proximity. p.31.

INTER-NEIGHBORHOOD STRATEGY: Safe and orderly roads

Credits are given to projects with 75% of their new residential roads designed for low automobile speeds of 30 km/h (30 Zones), and to those that allocate 70% of the roads for mixed uses and are designed for speeds of 40 km/h.

Credit 1. Walkable Street. pp.48-52.

NEIGHBORHOOD STRATEGY: Parking management

The construction of new parking facilities facing the street is prohibited. However, their placement beside or behind the building is allowed. 90% of parking spaces must be sold or rented separately. Ideally, parking on the side of streets should be forbidden for 70% of the project's new streets. No more than 20% of the project's development surface may be used for new parking spaces, with parking facilities that do not exceed 8,000 m^2. In addition, LEED ND recommends that for multi-family units, at least one safe and enclosed bicycle parking space be provided for 30% of their occupants; and for commercial units, for at least 10% of the planned jobs.

Credit 5. Reduce Parking Footprint. p 223. Credit 1. Walkable Street. p.183.

4. Mixed and Efficient Uses

NEIGHBORHOOD STRATEGY: Neighborhood facilities and commerce

It establishes that, to ensure access to recreational facilities, the project must be located or designed to have a recreational facility with free public access, of at least 4,000 m^2, within 800 meters of 90% of residential units and building entrances. At least 50% of residential units must be within an 800 meters walk from the entrance of an elementary or high school. LEED ND expects the authorities to commit to opening the school when the project reaches 50% occupancy. The streets that connect the residences with the schools must have sidewalks on both sides and a bike path. It must be attempted that pedestrians and cyclists be able to reach the school entrance without crossing a bus zone or a parking facility.

Credit 13. Local Food Production. p.73. Credit 9. Access to Civic and Public Space. p.67. Credit 10. Access to recreation facilities. p.68. Credit 15. Neighborhood Schools. p.76.

NEIGHBORHOOD STRATEGY: Efficient buildings

For residential design, it must be attempted that 75% or more of the blocks have a west-east axis of 15°, and that their west-east length be at least equal to the north-south length of the blocks. If this is not feasible, 75% or more of the total building surfaces must be designed or oriented so each building has an axis that is at least 1.5 times longer than the other.

Credit 10. Solar orientation. p.96.

1. The following can also be included: A diversity of sizes and types of residences within the project to achieve a diversity index (Simpson Diversity Index) of at least 0.5; and,
2. A percentage of new rental residential units, or subsidized, for residents with income lower than the area's median income.

Credit 4. Mixed-Income Diverse Communities. p.57.

In addition, it demands that water consumption within the buildings be less than 40% of the Energy Policy Act (2005) guidelines, and that it proves an improvement between 18-26% from the 2007 energy standard. Also, for new single and multi-family residences, 90% of the buildings must be certified by the Home Energy Rating System (HERS), with a minimum grade of 75.

Prerequisite 3. Minimum Building Water Efficiency. p.80, Credit 2. Building Energy Efficiency. p.84.

ROAD STRATEGY: Pedestrian-street interaction

Credits are earned when:

A. 60% of the streets are tree-lined, at 12 m intervals; or,

B. Trees or other shade-providing structures for 40% of the sidewalk lengths are provided. Trees start shading after 10 years.

It also values the presence on each mixed-use block, or at least every 250 m, of recycling containers that are adjacent or integrated to other containers.

Credit 14. Tree-Lined and Shaded Streets. p. 75. Credit 16. Solid Water Management Infrastructure p.104.

5. Urban centers and Active ground-floors

URBAN STRATEGY: Local economy

At least 30% of the project's surface should have low-income housing, with 70% of the surface used for non-residential uses. In addition, it requests that the project's geographic center be less than 800 meters of walkable distance from existing full-time employment, whose quantity is equal or greater than the number of residences in the project.

Credit 5. Housing and Jobs Proximity. p.31.

INTER-NEIGHBORHOOD STRATEGY: Neighborhood centers

For all projects, it must be planned that 50% of the residences should be within 400 m from 4 to 6 diverse uses, including at least one use from each category. For 16-hectare projects, within each neighborhood center, the main entrances for the buildings must be 90 to 120 meters from the point that represents the center of the cluster. For projects with regional commerce of more than 14,000 m^2, there must be a commitment to a competent transit agency to provide the project with a mass transportation system.

Credit 3. Mixed-use neighborhood centers. p.55.

NEIGHBORHOOD STRATEGY: Active ground-floors

It is proposed that at least 90% of the new buildings have an entrance at their main façade, which must directly lead to public space (street, square, park, esplanade with a depth greater than 15 meters, and not to a parking lot), and that they be connected to a sidewalk system of 3 m of width for mixed-use blocks and 1.5 m for other blocks.

Prerequisite 1. Walkable Street. p.41.

ROAD STRATEGY: Public-private transition

It demands that all commercial or facility windows remain viewable in the night hours, that is, that they not have shutters. Also, it proposes that mixed-use streets have:

A. Functioning entrances every 9 to 23 meters;

B. Windows for at least 60% of façades between 0.9 and 2.4 meters above street level, for active ground-floors that front public spaces.

And it values that:

A. 80% of buildings have a separation of no more than 7.6 meters between the façade and the private property limit (setback);

B. 50% of buildings have a setback of no more than 5.4 meters;

C. 50% of mixed-use buildings or non-residential buildings fronting the street have a façade within 0.3 meters of the sidewalk.

D. 40% of all active ground floors have a minimum of 30 centimeters of building height for every 90 centimeters of street width (1:3 ratio);

E. If the project has residential ground floors, 50% of the units must have an entrance that is no more than 0.6 meters above the sidewalk level;

F. If a façade extends along a sidewalk, no more than 40% of its length may be blind (without doors or windows).

Prerequisite 1. Walkable Street. P.41. Credit 1. Walkable Street. p.48.

6. Active and safe public spaces

URBAN STRATEGY: Strategic green areas

It is requested that all projects consult the national natural assets program to determine whether there are endangered species within the project's area. A habitat conservation plan must be drafted, along with a biologist or an ONG to determine the appropriate buffers. All projects must comply with national, state and local regulations for the conservation of wetlands and bodies of water. LEED ND values the creation and implementation of a long-term plan for new and existing habitats, bodies of water and buffer zones, as well as the creation of income sources for their management.

Prerequisite 2. Imperiled species and ecological communities conservation. p.10. Prerequisite 3. Wetland and water body conservation. p.12. Credit 9. Long-term Conservation Management of Habitat or Wetlands and Water Bodies. p.41.

INTER-NEIGHBORHOOD STRATEGY: Energy, water and waste efficiency

It states that the project must meet at least 4 out of 5 demands:

A. At least one recycling station;

B. At least one collection point;

C. A compost station;

D. Recycling containers every 240 meters; or

E. Recycle at least 50% of the non-hazardous demolition and construction waste.

Credit 16. Solid Waste Management Infrastructure p.103.

NEIGHBORHOOD STRATEGY: Public space networks

It proposes a civic space or an open space of at least 4,734.8 m^2, and at a walking distance of 402 m from 90% of the existing and planned residential units. Spaces of less than 4,046.9 m^2 must maintain a ratio of no less than 1:4. For projects of more than 3 hectares, the average size for civic spaces must be at least 2,023.4 m^2.

Credit 9. Access to Civic and Public Space. p.67.

ROAD STRATEGY: Public life

Community involvement is valued, reviewing that:

1. There are continuous communications channels between the promoter and the community;
2. The main project actors meet and give priority to contributions from project residents or workers;
3. That there is direct work with community organizations and the local government;
4. That an open community meeting be planned to request and document contributions;
5. That the project be modified according to those contributions; and
6. A participatory design workshop that lasts at least two days and is open to the public can be arranged with the participation of the main players.

Credit 12. Community Outreach and Involvement. p.72.

7. Community involvement and identity

> URBAN STRATEGY: Citizen relationships

Community involvement is valued, reviewing that:

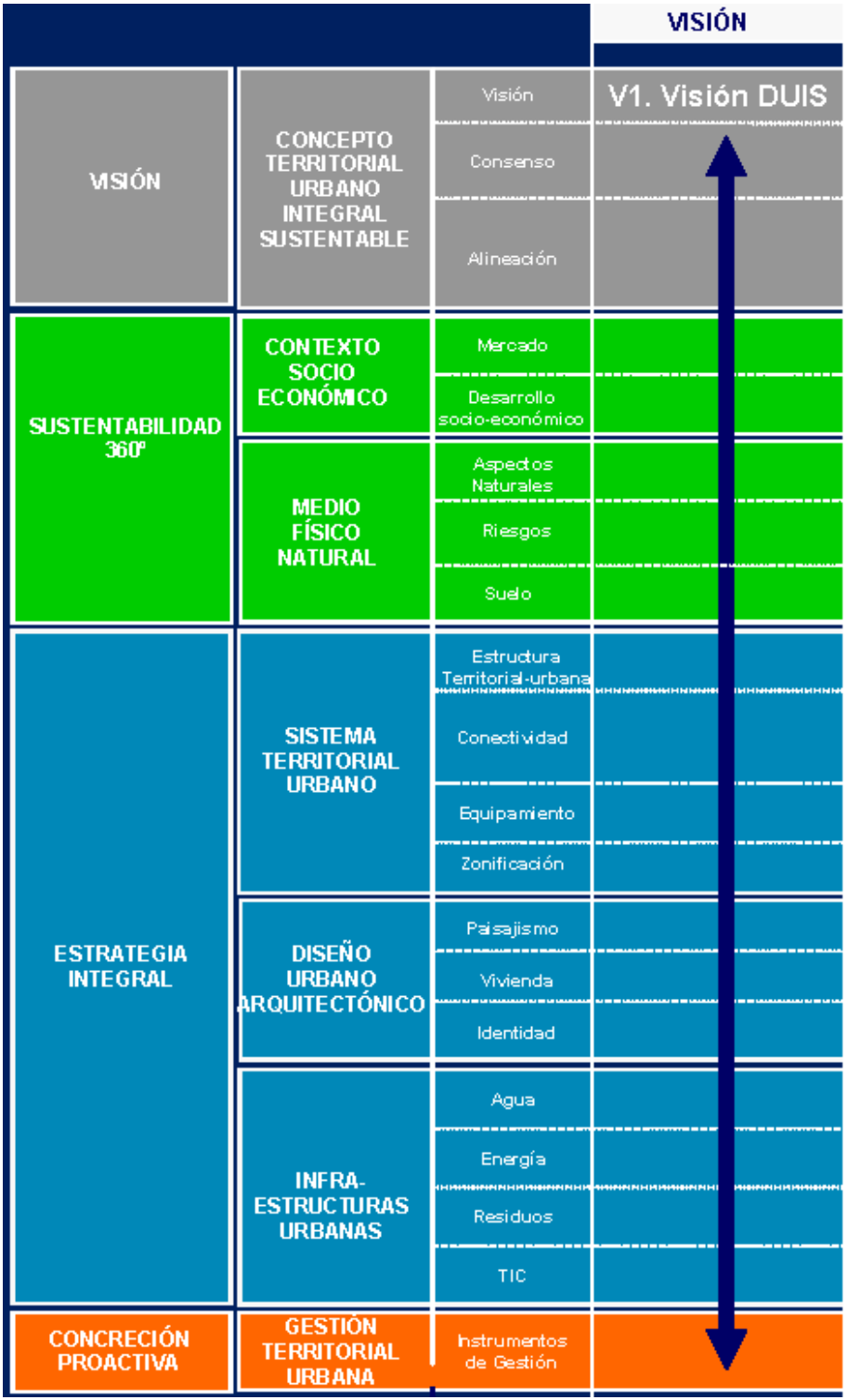
1. There are continuous communications channels between the promoter and the community;
2. The main project actors meet and give priority to contributions from project residents or workers;
3. There is direct work with community organizations and the local government;
4. An open community meeting be planned to request and document contributions;
5. The project be modified according to those contributions; and
6. A participatory design workshop that lasts at least two days and is open to the public can be arranged with the participation of the main players.

Credit 12. Community Outreach and Involvement. p.72.

INTER-NEIGHBORHOOD STRATEGY: Place identity

It indicates that the project must reuse 50% of an existing building or 20% of all existing buildings. Heritage buildings may not be completely or partially demolished, or any of their landscapes may not be altered as part of the project. Any rehabilitation must follow federal standards or be reviewed and approved by a competent authority.

Credit 6. Historic Resource Preservation and Adaptive Use. p.90.


VISIÓN
VISIÓN
CONCEPTO TERRITORIAL URBANO INTEGRAL SUSTENTABLE
Visión
V1. Visión DUIS
Consenso
Alineación
SUSTENTABILIDAD 360°
CONTEXTO SOCIO ECONÓMICO
Mercado
Desarrollo socio-económico
MEDIO FÍSICO NATURAL
Aspectos Naturales
Riesgos
Suelo
ESTRATEGIA INTEGRAL
SISTEMA TERRITORIAL URBANO
Estructura Territorial-urbana
Conectividad
Equipamiento
Zonificación
DISEÑO URBANO ARQUITECTÓNICO
Paisajismo
Vivienda
Identidad
INFRA-ESTRUCTURAS URBANAS
Agua
Energía
Residuos
TIC
CONCRECIÓN PROACTIVA
GESTIÓN TERRITORIAL URBANA
Instrumentos de Gestión

Sustainable Comprehensive Urban Developments, a challenge for new residential developments in Mexico

http://www.duis.gob.mx

The DUIS certificate is an initiative by the Mexican Federal Government that seeks to guide the residential market to a pattern of urban development that is comprehensively planned, through the generation of competitiveness among the various public and private players involved in the production of low-income housing. Since 2008, the National Housing Commission (CONAVI) - responsible for the design, coordination and promotion of the country's housing policies and programs - has worked on the development of criteria and indicators for sustainable residential developments. As part of the National Housing Program 2007-2012, which promotes a "sustainable residential development", the DUIS certificate was created as another tool to shift from a massive single-function low-income housing model to a model that allows for the integration of facilities, urban infrastructure, public spaces and green areas that exceed the local urban requirements.

The creation of the Interdepartmental Assessment Group (comprised of SEDESOL, SEMARNAT, SENER, SE, CONAVI, INFONAVIT, FOVISSTE, BANOBRAS, FONADIN, PROMEXICO and SHF) allowed for the development of 11 determining factors and 23 pre-requisites under a "traffic light" system ("Unacceptable", "In progress", "Basic", "Good Practice", "Innovating"), and 48 indicators with variable weights ("Minimum", "Desirable"). The assessment follows the Regional Urban Neighborhood Architecture (RUBA) methodology, which covers 4 scales - from regional urban planning to the residential unit and it has the goal of simultaneously articulating the set of components present at different scales, and that allow for the "making of a city". When entering this process, technical assistance can be obtained for both the urban planning portion of the development and for the attainment of licenses; but most importantly, assistance is available to obtain Federal Government financing for the construction of infrastructure, facilities and buildings.

DUIS References

1. Quality public transit

Inter-neighborhood strategy: Viability of public transit

It requires between 50 and 80 residences per hectare for certification.

Urban technical assessment 9. Density. p.65. Neighborhood technical assessment 5. Density by sector. p.80.

Neighborhood strategy: Access to public transit

50% of the residences have access to multi-modal transportation within a 1,000 meters walk.

Neighborhood technical assessment 5. Density by sector. Desirable p.80.

Road strategy: Public transit infrastructure

It demands that there be at least sheltered stops with benches for public transit stops and stations, as established by SEDESOL regulations.

Neighborhood technical assessment 2. Connectivity, accessibility and articulation of the neighborhood. Minimum. p.77.

2. Non-motorized mobility

Urban strategy: Continuity of the road layout

The connection between the project and the urban context is measured through the number of contact points the development has with primary outside roads, and through the opening of its borders to the immediate surroundings.

Neighborhood technical assessment 2. Connectivity, accessibility and articulation of the neighborhood. Desirable p.77.

Road strategy: Sidewalks and bike paths

It is based on criteria from Article 73 of the Housing Law for the assessment of sidewalk width, as a function of road hierarchy, urban furniture (phone booths and public garbage bins) and vegetation. In addition, it assesses the space dedicated to pedestrians through high, medium and low grades for meter^2 of pedestrian areas per meter^2 of road.

Neighborhood technical assessment 2. Connectivity, accessibility and articulation of the neighborhood. Minimum and desirable p. 77. Urban technical assessment 17. TIC infrastructure and innovation for urban services. Minimum. p. 73. Neighborhood technical assessment 10. Solid waste management in the development. Minimum. p.85.

In the same fashion that pedestrian space is assessed, the cycling infrastructure can be graded as high, medium or low depending on the meter^2 of bike paths per meter^2 road.

Neighborhood technical assessment 2. Connectivity, accessibility and articulation of the neighborhood. Minimum and desirable. P. 77. Urban technical assessment 17. TIC infrastructure and innovation for urban services. Minimum. P. 73. Neighborhood technical assessment 10. Solid waste management in the development. Minimum. P.85.

3. Vehicle demand management

Urban strategy: Optimization of daily commutes

It demands that at least a diversity of sectors be included in the economic activity, that new quality employment sources be generated with long-term staying power, and that local, national and international investment be attracted. DUIS desires that there be a commitment from the developer and the management of each new

economic activity node to include new training programs for residents, a portion of jobs with transportation services, and agreements with investors for the contracting of local residents.

Requirement 2. Productive investments and generation of employment. Minimum and desirable p.47.

4. Mixed and Efficient Uses

URBAN STRATEGY: Regional facilities

It proposes that, when there are over 10,000 residents, at least 0.5 meter^2 per resident be allocated to sports facilities of at least 5,000 meter^2; and at least 0.15 meter^2 for public squares with a minimum surface of 1,500 meter^2 at a maximum trip of 2,000 meters. Management facilities must be located within 1,000 meters of the central area.

Neighborhood technical assessment. Neighborhood public space design. Minimum. P. 81.

INTER-NEIGHBORHOOD STRATEGY: Neighborhood facilities and commerce

It demands that when there are more than 250 residents, 0.13 meter^2 per resident be allocated to basic commerce, which must be within 300 m; and that 3% of the developable area be allocated to commerce for more than 5,000 residents. It indicates that ideally 75% of the nearby commerce and 50% of the facilities be created in structural axes, that 25% of the commerce and 20% of services be gathered around green or pedestrian areas, that 50% of commerce be within a 1,000 meters walk from the residences, and that 20% of services be within 600 meters of the residences. Regarding neighborhood facilities, it asks that there at least be compliance with current SEDESOL regulations. Preferably, educational and cultural facilities should be within 500 meters of the central area; health and social assistance within 750 meters; the public market within 500 meters; and management facilities within 1,000 meters.

Neighborhood technical assessment 4. Use of space by sector. Minimum. Desirable p.79. Neighborhood technical assessment 3. Neighborhood facilities. p.78.

NEIGHBORHOOD STRATEGY: Efficient buildings

It demands that 80% of residences be appropriate for the bio-climate, and well oriented for sun and wind conditions.

Neighborhood technical assessment 7. Diversity. Desirable p.82.

In addition, it requests that residences have a solar water heater that meets the protocol proposed by CONAE, and with 10% in gas savings, that fluorescent bulbs be used, high-efficiency air-conditioning systems, and at least 30% savings in electric power. It also demands that at least 10% energy savings be achieved by the thermal cladding, 5% energy savings from awnings, 10% energy savings from orientation and 5% from natural ventilation.

Architectural technical assessment 5. Efficient energy use in the home. Minimum. p.93.

ROAD STRATEGY: Pedestrian-street interaction

It demands that there be a minimum of one row of trees for one-lane streets, two rows of trees for two-lane streets, three rows of trees for streets with a median, a tree-planting analysis according to local conditions, shaded pedestrian paths, continuity of space and views of green areas, and a portion of public spaces with free Internet connection. Regarding lighting, it demands a minimum of 22 lm/W for parks and gardens and 70 lm/W for sidewalks, stops and squares. For solid waste in green areas, DUIS demands public waste bins every 100 meters, and they must have compost containers. For solid waste in the development, it demands facilities for the

separation of waste with a capacity of 5 liters per resident per day, which assumes three liters of inorganic and two liters of organic waste. For telephone booths, it demands one every 300 meters.

Architectural technical assessment 1. Design of common green spaces. Minimum. p.89. Neighborhood technical assessment 9. Basic public space infrastructure. Minimum. Desirable p.84. Neighborhood technical assessment. 10. Solid waste management in the development. Minimum. p. 85. Urban technical assessment. 17. TIC infrastructure and innovation for urban services. Minimum. p. 73.

5. Urban centers and Active ground-floors

URBAN STRATEGY: Local economy

It states that at a minimum, the residences must be linked with other uses of private space: commercial, tertiary, industrial. Preferably, 50% of the residences should be adapted to the user: with vegetable gardens, commercial space on the ground floor within activity axes, or with work areas.

Urban technical assessment. 11. Articulation of the residence in the regional STRATEGY. Neighborhood technical assessment. p. 67. 7: Diversity. Desirable p. 82.

6. Active and safe public spaces

URBAN STRATEGY: Strategic green areas

The value of the project's comprehensive environmental impact is measured by the effectiveness of the proposed measures and compliance with criteria, guidelines and environmental strategies. It also considers the volume of water discharges supported by the territory, the capacity of the current network, the discharge volume for the development, the propensity to flood, and compliance with mitigating measures. In addition, DUIS establishes that each resident must have from 7 to 14 m^2 of green areas.

Regional technical assessment 3. Environmental order and/or environmental mitigation. p.48. Regional technical assessment 4. Environmental and risk issues. p.49. Urban technical assessment. Environmental protection. p.57.

INTER-NEIGHBORHOOD STRATEGY: Energy, water and waste efficiency

It demands that at least all public spaces have access to drinking water and to the drainage network; that they comply with hermetism regulations and with the allowable limits of water for human consumption; and that they comply with current energy efficiency regulations. DUIS also values when 100% of water used for irrigation is re-used, when the energy used for public lighting comes from 100% renewable sources, when the home has spaces and facilities for the primary separation of waste (organics and inorganics) with a minimum capacity of 20 liters, located in ventilated areas and not obstructing circulation.

Neighborhood technical assessment 9. Basic public space infrastructure. Minimum. p.84. Architectural technical assessment 6. Adequate residential and construction solid waste management

NEIGHBORHOOD STRATEGY: Public space networks

There must be gardens with playgrounds of at least 1.5 $meter^2$ per resident and of a minimum 200 $meter^2$ to 300 $meter^2$, and they must be accessible without crossing primary roads; one $meter^2$ of parks per resident no further than 1,000 meters; a minimum of 0.15 $meter^2$ of public squares per resident of a minimum size of 1,500 $meter^2$ for 10,000 residents and no further than 2,000 meters. DUIS values the attempt to connect a portion of the green zones, a diversity of vegetation and ornaments, and an articulation of parks, squares, streets and green spaces within the blocks.

Neighborhood technical assessment 6. Neighborhood public space design. Minimum. Desirable p.81.

ROAD STRATEGY: Public life

It values the existence of a facilities and landscape design proposal that is sensitive to the place's cultural identity and to current trends; the use of vegetation, shade and water in the landscape design; the generation of a system of public spaces; and that a portion of the public spaces offer digital support to stimulate the residents' expression and interactions.

Neighborhood technical assessment 11. TIC Accessibility to public spaces. Minimum. Desirable p.86. Architectural technical assessment 1. Design of common green spaces. Minimum. Desirable p.89.

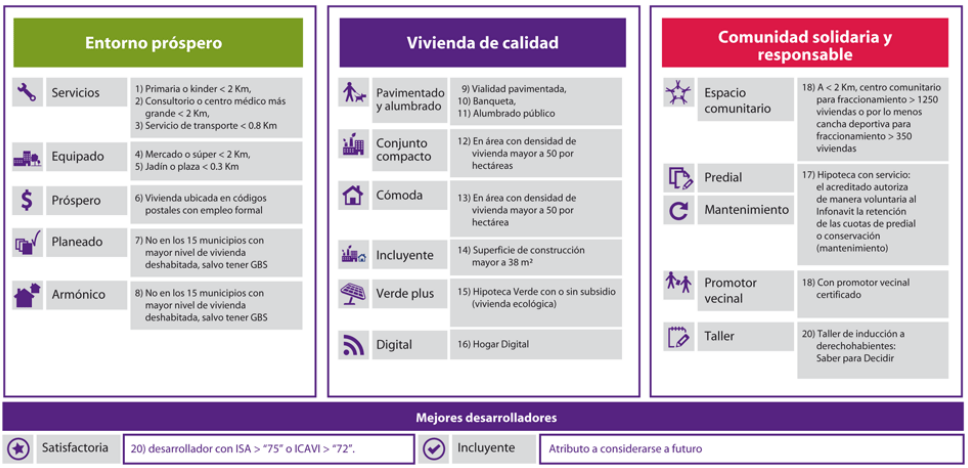
7. Community involvement and identity

INTER-NEIGHBORHOOD STRATEGY: Place identity

The following must be provided:

1. The natural and topographic components to be conserved; and,
2. An analysis to identify the area's typical architecture; and,
3. A photo survey where heritage assets are identified at regional-urban-local levels and by type: tangible (cultural, natural or mixed), intangible (traditions, festivals, markets, processions), and maps pointing out their location; and,
4. A survey of trees and tree clusters, topographic survey with level curves and studies of soil, morphology, species, natural landmarks; and,
5. A topography and photo survey identifying the type of infrastructure and facilities must be created to acknowledge and conserve these assets; and,
6. The views or visual corridors should be conserved from the regional STRATEGY.

Pre-requisite 13. Identification of landscape assets. p.24. Pre-requisite 18. Typical architecture. p.26. Pre-requisite 19. Identification of heritage resources. p.27. Determinant 8. Survey of species and types of soil. p.40. Determinant 10. Survey and study of built and cultural assets. p.42. Regional technical assessment 7. Natural and anthropogenic landscape components. p.52. Urban technical assessment 12. Recovery, conservation and re-valuing of assets. p.68. Neighborhood technical assessment 8. Identity. p.83. Architectural technical assessment 3. Urban-architectural design according to heritage and cultural identity. p.91.


Entorno próspero
Servicios
1) Primaria o kinder < 2 Km,
2) Consultorio o centro médico más grande < 2 Km,
3) Servicio de transporte < 0.8 Km
Equipado
4) Mercado o súper < 2 Km,
5) Jadín o plaza < 0.3 Km
Próspero
6) Vivienda ubicada en códigos postales con empleo formal
Planeado
7) No en los 15 municipios con mayor nivel de vivienda deshabitada, salvo tener GBS
Armónico
8) No en los 15 municipios con mayor nivel de vivienda deshabitada, salvo tener GBS
Vivienda de calidad
Pavimentado y alumbrado
9) Vialidad pavimentada,
10) Banqueta,
11) Alumbrado público
Conjunto compacto
12) En área con densidad de vivienda mayor a 50 por hectáreas
Cómoda
13) En área con densidad de vivienda mayor a 50 por hectárea
Incluyente
14) Superficie de construcción mayor a 38 m²
Verde plus
15) Hipoteca Verde con o sin subsidio (vivienda ecológica)
Digital
16) Hogar Digital
Comunidad solidaria y responsable
Espacio comunitario
18) A < 2 Km, centro comunitario para fraccionamiento > 1250 viviendas o por lo menos cancha deportiva para fraccionamiento > 350 viviendas
Predial
Mantenimiento
17) Hipoteca con servicio: el acreditado autoriza de manera voluntaria al Infonavit la retención de las cuotas de predial o conservación (mantenimiento)
Promotor vecinal
18) Con promotor vecinal certificado
Taller
20) Taller de inducción a derechohabientes: Saber para Decidir
Mejores desarrolladores
Satisfactoria
20) desarrollador con ISA > "75" o ICAVI > "72".
Incluyente
Atributo a considerarse a futuro

INFONAVIT Complete Life: Sustainable Housing, the seal for residential developments with sustainable homes

http://portal.infonavit.org.mx

The National Workers' Housing Fund Institute (INFONAVIT) is the primary mortgage credit-granting institution in Mexico, with over 500,000 credits granted in 2012[1].

INFONAVIT's Complete Life program started operations in 2011: Sustainable Housing to encourage the construction of residences that ensure a better quality of life for their families. The program is based on a binary grading of the residences, in other words, with meeting with 20 easily achievable attributes in three categories:

- Wealth of the surroundings,
- Quality of the residence,
- Community solidarity and responsibility.

Residences built in the 15 municipalities with the highest vacancy rates are excluded from receiving this program's benefits.

The program benefits consist of a series of incentives for the developer, such as:

- immediate payment for the residence by INFONAVIT (even when there is a wait to negotiate credits, or when the jurisdiction's new home limit is exceeded);
- promotion of the residences (orientation workshop "Know to decide" intended for participants, protection for developments with at least 66% of sustainable homes).

1 INFONAVIT (30/01/2013). Credits exercised by jurisdiction. Historical since 1972.

Sustainable Residence References

1. Quality public transit

URBAN STRATEGY: Proximity to the urban footprint

Incentives are granted for those projects complying with specific characteristics of project location, and that are based on the Municipal Residential Competitiveness Index (INOMUV), such as: regulatory framework, provision of public services, home vacancy rate in the municipality, among others.

Wealthy surroundings. Planned Attribute 7.

INTER-NEIGHBORHOOD STRATEGY: Viability of public transit

It requires between 50 and 80 residences per hectare for certification.

Urban technical assessment 9. Density. p.65. Neighborhood technical assessment 5. Density by sector. p.80. Compact development. Attribute 12.

NEIGHBORHOOD STRATEGY: Access to public transit

An attempt must be made to provide access to any kind of public transportation, at any frequency, within 800 m of the residences, and with recognizable stops.

Wealthy surroundings. Functioning services. Attribute 3.

3. Vehicle demand management

URBAN STRATEGY: Optimization of daily commutes

An attempt must be made for the residences to be near an employment source, through location within the CONAVI polygons.

Wealth Attribute 6.

4. Mixed and Efficient Uses

URBAN STRATEGY: Regional facilities

A mandatory attribute is the access, within 2 km, to a primary school or pre-school, to a clinic or medical center, to a grocery store or supermarket, and to a community center for subdivisions of more than 1,250 residences; or to at least one sports facility for subdivisions of more than 350 residences.

Wealthy surroundings. Functioning services. Attributes 1 and 2. Facilities. Attributes 4 and 5. Community Solidarity and Responsibility. Community space. Attribute 16.

NEIGHBORHOOD STRATEGY: Efficient buildings

Whether a residence's credit has a Green Mortgage, with or without subsidy (environmental home), it must be reviewed.

Quality residence. Green. Attribute 14.

6. Active and safe public spaces

INTER-NEIGHBORHOOD STRATEGY: Energy, water and waste efficiency

It provides the retention of maintenance fees from the buyer, which include a waste collection service.

Community Solidarity and Responsibility. Maintenance. Attribute 17.

NEIGHBORHOOD STRATEGY: Public space networks

It indicates the need for a garden or a square (a small area with a playground or benches) within 300 m from each of the residences.

Wealthy surroundings. Facilities. Attribute 5.

7. Community involvement and identity

URBAN STRATEGY: Citizen relationships

It requests that participants receive an orientation workshop "Know to decide", where the advantages of Sustainable Homes are explained in detail.

Community Solidarity and Responsibility. Workshop. Attribute 19.

NEIGHBORHOOD STRATEGY: Community management

It requests that the mortgage include services; that is, that the owner authorizes INFONAVIT to retain area or conservation fees. In addition, at least one Certified Neighborhood Promoter is required for every 500 residences.

Community Solidarity and Responsibility, Real Estate. Maintenance. Attribute 17. Neighborhood Promoter. Attribute 18.

DOTS INDICATORS FOR THE ASSESSMENT OF PROJECTS.

#	ITEM	SUB-ITEM	INDICATOR	INDICATOR CATEGORY	UNITS
1	**Non-motorized mobility**	***Public transit***	Modal distribution (started trips)	TECHNICAL OPERATIONAL	Percentage of trips by modality
2	**Non-motorized mobility**	***Public transit***	Modal distribution (finished trips)	TECHNICAL OPERATIONAL	Percentage of trips by modality
3	**Non-motorized mobility**	***Public transit***	Modal distribution (internal trips)	TECHNICAL OPERATIONAL	Percentage of trips by modality
4	**Non-motorized mobility**	***Cycling infrastructure***	Bike paths	TECHNICAL OPERATIONAL	Linear meters
5	**Non-motorized mobility**	***Cycling infrastructure***	Types of bike routes (painted, segregated, segregated with median)	TECHNICAL OPERATIONAL	Linear meters by type of bike route
6	**Non-motorized mobility**	***Cycling infrastructure***	Bicycle parking	TECHNICAL OPERATIONAL	Number of units and number of spaces with bicycle parking
7	**Non-motorized mobility**	***Pedestrian infrastructure***	Effective sidewalk width	TECHNICAL OPERATIONAL	Assessment 1-5
8	**Non-motorized mobility**	***Pedestrian infrastructure***	Crossings	TECHNICAL OPERATIONAL	Assessment 1-5
9	**Non-motorized mobility**	***Pedestrian infrastructure***	Signaling	TECHNICAL OPERATIONAL	Assessment 1-5
10	**Non-motorized mobility**	***Pedestrian infrastructure***	Pavement and sidewalk surface	TECHNICAL OPERATIONAL	Assessment 1-5
11	**Non-motorized mobility**	***Pedestrian infrastructure***	Obstacles	TECHNICAL OPERATIONAL	Assessment 1-5
12	**Non-motorized mobility**	***Transit operations***	Is non-motorized mobility promoted?	INSTITUTIONAL	yes / no
13	**Non-motorized mobility**	***Urban design***	Are there regulations for pedestrian and cycling signaling?	INSTITUTIONAL	yes / no
14	**Non-motorized mobility**	***Real-estate design***	Are there accessibility regulations?	INSTITUTIONAL	yes / no
15	**Transit**	***Public transit***	System service (times per day)	TECHNICAL OPERATIONAL	Number of minutes per vehicle
16	**Transit**	***Public transit***	Passenger capacity / demand	TECHNICAL OPERATIONAL	(number of places / vehicle) / (average passengers / vehicle)
17	**Transit**	***Public transit***	Excess capacity	TECHNICAL OPERATIONAL	(supplied capacity - used capacity) peak hours
18	**Transit**	***Public transit***	Accessible design of the station	TECHNICAL OPERATIONAL	yes / no
19	**Transit**	***Public transit***	Accessible vehicles	TECHNICAL OPERATIONAL	yes / no
20	**Transit**	***Transit***	Public transit system - Subway, bus, trolley-bus	INSTITUTIONAL	yes / no
21	**Transit**	***Transit***	Private public transit system - collective transit	INSTITUTIONAL	yes / no
22	**Transit**	***Transit***	Transit system fee	INSTITUTIONAL	Cost / system per trip
23	**Public space**	***Services***	Benches	TECHNICAL OPERATIONAL	yes / no
24	**Public space**	***Services***	Garbage bins	TECHNICAL OPERATIONAL	yes / no
25	**Public space**	***Services***	Telephones, restrooms, mailboxes, etc.	TECHNICAL OPERATIONAL	Assessment 1-5
26	**Public space**	***Services***	Shade	TECHNICAL OPERATIONAL	Assessment 1-5
27	**Public space**	***Services***	Lighting	TECHNICAL OPERATIONAL	Assessment 1-5
28	**Public space**	***Appeal***	Quality of façades (permeability)	TECHNICAL OPERATIONAL	Assessment 1-5
29	**Public space**	***Services***	Buffer zones	TECHNICAL OPERATIONAL	Assessment 1-5
30	**Public space**	***Services***	Street trees	TECHNICAL OPERATIONAL	Assessment 1-5
31	**Public space**	***Appeal***	Organization and quality of street retail	TECHNICAL OPERATIONAL	Assessment 1-5
32	**Public space**	***Planning and regulation***	Are there controls to regulate street commerce?	INSTITUTIONAL	yes / no
33	**Public space**	***Urban design***	Are there guidelines for the planning and design of public spaces?	INSTITUTIONAL	yes / no
34	**Public space**	***Urban design***	Are there accessibility guidelines?	INSTITUTIONAL	yes / no

#	ITEM	SUB-ITEM	INDICATOR	INDICATOR CATEGORY	UNITS
35	**Uses of space**	***Profitability***	Lease price (commercial)	ECONOMIC FINANCIAL	Space usage Profit/Cost per m2 (city) vs. (periphery)
36	**Uses of space**	***Profitability***	Lease price (residential)	ECONOMIC FINANCIAL	Cost per m2 (city) vs. (periphery)
37	**Uses of space**	***Cost***	Cost per unit for a 60 m2 apartment	ECONOMIC FINANCIAL	Cost (city) vs. (periphery)
38	**Uses of space**	***Cost***	Cost per unit for a 1,000 m2 office	ECONOMIC FINANCIAL	Cost (city) vs. (periphery)
39	**Uses of space**	***Financial support***	Are the same services offered to DOTS projects as there are for other developments?	ECONOMIC FINANCIAL	yes / no
40	**Uses of space**	***Financial support***	Do mortgage programs support DOTS?	ECONOMIC FINANCIAL	yes / no
41	**Uses of space**	***Density***	Built area	TECHNICAL OPERATIONAL	Real m2 of construction / m2 of footprint
42	**Uses of space**	***Density***	Potential building area	TECHNICAL OPERATIONAL	m2 of construction by zoning / m2 of footprint
43	**Uses of space**	***Density***	Space efficiency	TECHNICAL OPERATIONAL	Real m2 of construction / m2 of potential construction
44	**Uses of space**	***Use of space***	Percentage of built area by type of space	TECHNICAL OPERATIONAL	Percentage of type of space use = number of levels * area / total m2
45	**Uses of space**	***Use of space***	Percentage of residential area by type of residence	TECHNICAL OPERATIONAL	Percentage of units for the type of residence
46	**Uses of space**	***Use of space***	Abandoned residence	TECHNICAL OPERATIONAL	Number / residential units
47	**Uses of space**	***Planning and regulation***	Do the allowed uses promote the use of the automobile?	INSTITUTIONAL	yes / no
48	**Uses of space**	***Planning and regulation***	Are there development regulations with minimum densities?	INSTITUTIONAL	yes / no
49	**Uses of space**	***Planning and regulation***	Are there development regulations with mandatory mixed uses?	INSTITUTIONAL	yes / no
50	**Uses of space**	***Planning and regulation***	Is there a specific plan for the DOTS neighborhood?	INSTITUTIONAL	yes / no
51	**Uses of space**	***Planning and regulation***	Are there space use regulations that promote the automobile?	INSTITUTIONAL	yes / no
52	**Uses of space**	***Planning and regulation***	What type of taxes are paid by developers?	INSTITUTIONAL	yes / no
53	**Uses of space**	***Planning and regulation***	What are the restrictions for free spaces?	INSTITUTIONAL	yes / no
54	**Uses of space**	***Planning and regulation***	Usage value of INSTITUTIONAL space	INSTITUTIONAL	Cost per m2 of construction
55	**Uses of space**	***Cash incentives***	Are there cash incentives for the development of DOTS neighborhoods?	INSTITUTIONAL	yes / no
56	**Uses of space**	***Cash incentives***	Are there tax incentives for developers?	INSTITUTIONAL	yes / no
57	**Uses of space**	***Cash incentives***	Are there density bonuses for neighborhood developments?	INSTITUTIONAL	yes / no
58	**Uses of space**	***Asset incentives***	Are there parking reductions for developers?	INSTITUTIONAL	yes / no
59	**Uses of space**	***Asset incentives***	Is there support for the grouping of lots for the development of the neighborhood?	INSTITUTIONAL	yes / no
60	**Uses of space**	***Planning and regulation***	Is there a mechanism to promote new space uses?	INSTITUTIONAL	yes / no
61	**Ground floors**	***Uses of space***	Abandoned lots	TECHNICAL OPERATIONAL	Number / total lots per neighborhood
62	**Ground floors**	***Uses of space***	Percentage of 24-hour uses	TECHNICAL OPERATIONAL	Percentage / total lots per neighborhood
63	**Ground floors**	***Planning and regulation***	Do developers have to build and maintain public spaces?	INSTITUTIONAL	yes / no
64	**Ground floors**	***Planning and regulation***	Are there fines for abandoned lots?	INSTITUTIONAL	yes / no
65	**Ground floors**	***Real-estate design***	Are there regulations for the design of façades?	INSTITUTIONAL	yes / no
66	**Ground floors**	***Transit***	Are there regulations for the design of public transit stations?	INSTITUTIONAL	yes / no

#	ITEM	SUB-ITEM	INDICATOR	INDICATOR CATEGORY	UNITS
67	**Automobile management**	***Road infrastructure***	Type of road	TECHNICAL OPERATIONAL	m - class
68	**Automobile management**	***Road infrastructure***	Number of total lanes	TECHNICAL OPERATIONAL	Number
69	**Automobile management**	***Road infrastructure***	Most frequent number of lanes	TECHNICAL OPERATIONAL	Number
70	**Automobile management**	***Road infrastructure***	Road network density	TECHNICAL OPERATIONAL	Average size of block
71	**Automobile management**	***Parking***	Number of free parking spaces on the street	TECHNICAL OPERATIONAL	Number / neighborhood
72	**Automobile management**	***Parking***	Number of paid parking spaces on the street	TECHNICAL OPERATIONAL	Number / neighborhood
73	**Automobile management**	***Parking***	Price of paid parking spaces on the street	TECHNICAL OPERATIONAL	Number / place / hour
74	**Automobile management**	***Parking***	Number of parking spaces within building	TECHNICAL OPERATIONAL	Number / neighborhood
75	**Automobile management**	***Parking***	Price of parking spaces within building	TECHNICAL OPERATIONAL	Cost / place / hour
76	**Automobile management**	***Pedestrian infrastructure***	Traffic calming	TECHNICAL OPERATIONAL	Assessment 1-5
77	**Automobile management**	***Parking regulations***	Is shared parking promoted?	INSTITUTIONAL	yes / no
78	**Automobile management**	***Parking regulations***	Is the cost of parking separate from rent or property costs?	INSTITUTIONAL	yes / no
79	**Automobile management**	***Parking regulations***	What are the parking requirements for the real-estate construction?	INSTITUTIONAL	yes / no
80	**Automobile management**	***Parking regulations***	Are there currently streets that prohibit parking?	INSTITUTIONAL	Linear meter / neighborhood
81	**Automobile management**	***Parking management***	Are there parking regulations?	INSTITUTIONAL	yes / no
82	**Automobile management**	***Parking management***	Are there mechanisms for the increase of parking fees?	INSTITUTIONAL	yes / no
83	**Automobile management**	***Parking management***	Are street parking rates more expensive in the neighborhood than outside?	INSTITUTIONAL	yes / no
84	**Automobile management**	***Transit planning***	Are clean technologies mandatory for transit vehicles?	INSTITUTIONAL	yes / no
85	**Automobile management**	***Transit operations***	Are speed limits promoted?	INSTITUTIONAL	yes / no
86	**Automobile management**	***Transit***	Permanent taxi spaces	INSTITUTIONAL	yes / no
87	**Automobile management**	***Transit***	100% pedestrian streets	INSTITUTIONAL	Number over neighborhood
88	**Citizen involvement**	***Organizational capacity***	Is there a BID? What does the BID do?	ECONOMIC FINANCIAL	yes / no
89	**Citizen involvement**	***Community involvement***	Is there community planning for permanent processes?	INSTITUTIONAL	yes / no
90	**Context**	***Market demand***	Population growth rate - city	ECONOMIC FINANCIAL	Percentage
91	**Context**	***Market demand***	Population growth rate projection - city	ECONOMIC FINANCIAL	Percentage
92	**Context**	***Market demand***	Population growth rate - city center vs. periphery	ECONOMIC FINANCIAL	Percentage
93	**Context**	***Market demand***	Population growth rate projection - city center vs. periphery	ECONOMIC FINANCIAL	Percentage
94	**Context**	***Demographic properties***	Total population	TECHNICAL OPERATIONAL	Number of total population
95	**Context**	***Demographic properties***	Ages	TECHNICAL OPERATIONAL	Percentage of each age group
96	**Context**	***Demographic properties***	Gender	TECHNICAL OPERATIONAL	Percentage by gender
97	**Context**	***Demographic properties***	Salary / poverty map	TECHNICAL OPERATIONAL	Percentage for each socio-economic group
98	**Context**	***Demographic properties***	Disability	TECHNICAL OPERATIONAL	Percentage of persons with disabilities
99	**Context**	***Demographic properties***	Number of residents	TECHNICAL OPERATIONAL	Total number of residents within station's area
100	**Context**	***Demographic properties***	Size of residence	TECHNICAL OPERATIONAL	average (number of persons / residential unit)
101	**Context**	***Location***	Location within the metropolitan area	TECHNICAL OPERATIONAL	CN, center, periphery, etc.
102	**Context**	***Market demand***	Employment rate - city	ECONOMIC FINANCIAL	Percentage
103	**Context**	***Market demand***	Employment rate projection - city	ECONOMIC FINANCIAL	Percentage
104	**Context**	***Market demand***	Employment rate - city center vs. periphery	ECONOMIC FINANCIAL	Percentage
105	**Context**	***Density***	Population density	ECONOMIC FINANCIAL	Persons / ha
106	**Context**	***Density***	Formal employment density	ECONOMIC FINANCIAL	Formal jobs / ha
107	**Context**	***Density***	Informal employment density	ECONOMIC FINANCIAL	Informal jobs / ha
108	**Context**	***Market demand***	Employment rate projection - city center vs. periphery	ECONOMIC FINANCIAL	Percentage
109	**Context**	***Profitability***	Occupancy rate (residential)	ECONOMIC FINANCIAL	Percentage of rental properties
110	**Context**	***Profitability***	Occupancy rate (commercial)	ECONOMIC FINANCIAL	Percentage of rental properties

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ABBREVIATIONS AND GLOSSARY

List of abbreviations

BREEAM Communities: Building Research Establishment Environmental Assessment Methodology Communities.

CASBEE: Comprehensive Assessment System for Built Environment Efficiency.

CGBC: Canada Green Building Council

CNU: Congress of New Urbanism.

FDOT: Florida Department of Transportation.

GLA: Great London Authority.

IBEEC: Institute for Building Environment and Energy Conservation

ILBI: International Living Future Institute

ITE: Institute of Transportation Engineers.

NRDC: Natural Resources Defense Council.

PPS: Project for Public Spaces.

SEDESOL: Secretaría de Desarrollo Social (Department for Social Development).

SHCP: Secretaría de Hacienda y Crédito Público (Department of Finance and Public Credit).

SHF: Sociedad Hipotecaria Federal (Federal Mortgage Society).

USGBC: United States Green Building Council.

Glossary

Accessibility: Ease of access to a place, person or thing, be it through mobility, proximity and distance, or through social aspects, such as fairness, affordability and gender

(Source: DOTS® Manual)

Basic retail commerce: Self-service establishment for the commercialization of products, such as food and basic consumption items, including personal care products, home necessities, and others.

(Source: Institute for the Safety and Social Services of Public Employees, ISSSTE, from the Regulations for the System for Urban Facilities, Volume III Commerce and Supply, "Store or shopping center", p.18)

Bicycle parking: It can be offered through various facilities: with or without security, paid or free, sheltered or in the open. Once the facilities are defined, the design can be chosen. To properly and continuously use this form of urban furniture, it is important to choose appropriate furniture that locks both the bicycle's frame as well as one or two wheels. Designs that only allow for the locking of the front wheel must be avoided. The furniture must be placed to allow for easy maneuvering, and circulation spaces should be respected. They must also be placed in a well-lit area to allow for night-time use. The preferred type of furniture is the inverted "U".

(Source: ITDP (2011). Comprehensive cycling mobility manual for Mexican cities Volume V: Inter modality. p.40)

Bike Path: Infrastructure specifically dedicated to bicycle flow. The selection of the type of infrastructure (shared, segregated, one-way, two-way, etc.) to be applied depends on the type of road, the volume and speed of automobile traffic, the function, form and use of the road, and the behavior of users. Typically, cycling road infrastructure within an urban environment must be designed as close as possible to a low-speed lane, it should be one-way and moving in the same direction as automobile traffic, and it must strive for high visibility at intersections.

(Source: ITDP (2011). Comprehensive cycling mobility manual for Mexican cities Volume V: Infrastructure. pp.106-143)

Blind wall: It refers to a building wall without windows, doors or other openings, especially those along a façade.

(Source: Prepared by EMBARQ)

Car sharing: It refers to private self-organized strategies to share private vehicles, public or private programs that offer semi-private vehicles to allow for the sharing of the service and to reduce the dependence on private purchase of vehicles.

(Source: DOTS® Manual)

Citizen Bike Path: Concept promoted by a group of Guadalajara residents, whose purpose is to paint bike paths to set a portion of car lanes aside for the exclusive use of bicycles on neighborhood streets.

(Source: Prepared by EMBARQ)

Complete street: A complete street is a street for everyone. It is designed and operated to allow safe access to all its users. Pedestrians, cyclists, drivers and public transit users of all ages and abilities can move on and through a complete street. It is easy to cross the street, walk to stores and ride a bike to work. It allows for buses to be on schedule, and provides safety for people walking to and from the train station.

(Source: National Complete Streets Coalition)

Connectivity: Urban network communications structure, be it from a public transit system, the road, pedestrian or cycling networks, expressed as the number of direct connections from a point or neighborhood unit with another geographic point, or with the rest of the neighborhood units.

(Source: DOTS® Manual)

Construction density: It indicates the number of buildings within an area per surface unit of the area's territory. Typically, hectares are used as units of measure.

(Source: DOTS® Manual)

Eco-technologies: It refers to technological tools that offer environmental advantages (energy efficiency, sustainable use of resources) over their traditional counterparts. For instance: Energy-saving bulbs, thermal insulation, double-glazing windows with PVC frames, solar water heater, in-line gas water heater, ecological grade toilet of a maximum of 5 liters per discharge, water-flow savings devices in bathroom and kitchen faucets.

(Source: CONAVI. Sustainable Homes in Mexico. p. 26)

Facility: Space or building that provides citizens with social services, such as education, cultural, health, recreational and for well being; as well as the provision of practical support to public administration and basic urban services from the city.

(Source: DOTS® Manual)

Gross density: Ratio of built surface to the total surface of a zone or area.

(Source: Prepared by EMBARQ)

Gated community: Set of residences with restricted and controlled access. Also referred to as closed subdivision.

(Source: Prepared by EMBARQ)

Greenhouse gases: Gases whose presence in the atmosphere contributes to climate change. The more relevant ones are naturally present in the atmosphere, and their concentration is modified by human activity, other artificial gases and industrial byproducts are also considered. Water vapor (H_2O), Carbon dioxide (CO_2), Methane (CH_4), Nitrogen oxides (NO_x), Ozone (O_3), and Chlorofluorocarbons (artificial).

(Source: DOTS® Manual)

Green Mortgage: Mortgage credit granted to a home, based on the savings achieved in water and energy consumption from ecological technologies installed in the home, and which allow INFONAVIT to grant additional credits as the ability of the owner to re-pay increases due to the savings.

(Source: INFONAVIT)

Indicator: It refers to a data point that synthesizes information within one concept or number, and whose function is to display the changes that occur over time around a regulation or a concept. The selection of an indicator implies the identification of a variable that is quantitative, measurable, operable and tangible.

(Source: DOTS® Manual)

Inter-modality: It refers to the use of different transportation means (motorized and non-motorized) within one trip, and to the ability of the various public transportation systems to work in a manner that is holistic, synchronized and complementary.

(Source: DOTS® Manual)

Mass public transit: It refers to public transit systems managed by the local government, which transport a high number of users from one point of the city to another. They have the quality of being part of a network that connects distant points within the city, and are laid out to traverse from one end of the city to the other.

(Source: DOTS® Manual)

Mixed uses: It refers to the variety and combination of uses and activities that may be found within a neighborhood, building, or architectural complex. They are an important factor in the neighborhood's success, as they energize public spaces and allow residents and visitors a great variety of activities within a nearby perimeter. Some examples are services for commerce, culture, work and entertainment, which energize the local economy.

(Source: DOTS® Manual)

Modal distribution: It refers to the distribution by modes of transportation within a specific area, expressed in percentages.

(Source: DOTS® Manual)

Modal Transfer Center (CETRAM): They are physical spaces within the road infrastructure, where several land passenger transportation modes converge (individual, collective, mass). Their purpose is to ease the transfer of passenger from one mode to another.

(Source: Transportation and Roads Department, SETRAVI)

Multiple-use Square (Open market or Mobile market): Open markets are establishments with temporary facilities, typically located on fixed locations, preferably on a paved surface with water, drainage and electric power services. They are attended by small producers and retailers who sell products to the end-consumer, such as food, personal care products, home necessities, and others. They are typically complementary to the established retail of basic products, and operate 1 or 2 days per week in urban and rural locations where commercial retail establishments cannot meet demand, or where the established structure does not provide to meet the demand from low-income consumers. Most of the open markets are located beside a public market, where merchants from both share the management, rights and obligations. Therefore, when the demand frequency for products increases, open market merchants operate daily. This creates the possibility to incorporate them to permanent establishments.

(Source: Commerce and Industry Department, SECOFI)

Neighborhood: Physical and social unit with relatively homogeneous characteristics. Its space is bordered by a pedestrian radius of 500 to 1000 meters from a neighborhood center or public transit station. It exists at pedestrian or cycling distances, where through policies and urban planning and design, the necessary changes are promoted to energize a more sustainable urban development model.

(Source: DOTS® Manual)

(Source: DOTS® Manual) Neighborhood center: Locations where day-to-day activities are centralized, and where neighbors share time around a landmark (church), facility (school), second level retail (furniture, clothing), public services (municipal office).

(Source: Prepared by EMBARQ)

Net density: Ratio of built surface to the total surface of a zone or area, not including surfaces used for roads, facilities, green areas and restricted areas.

(Source: Prepared by EMBARQ)

Non-motorized mobility: It refers to mobility by bicycle, on foot, or similar. It excludes the use of engines; and corresponds to short-distance trips (1 km by foot and 8 km by bicycle, approximately).

(Source: DOTS® Manual)

Pedestrian radius: It refers to the distance a person is typically willing to walk for one trip. It is estimated to be between 500 and 1,000 meters.

(Source: DOTS® Manual)

Pedibus: It refers to a program developed in Bogota, which consists of a group of up to 15 children, who live relatively close to each other, and who take a route to school or home as if they were on a bus, but on foot and accompanied by an adult.

(Source: Prepared by EMBARQ)

Population density:It indicates the number of inhabitants per surface unit of the area's territory, expressed in hectares or square meters.

(Source: DOTS® Manual)

Productive residence: It refers to a building, whose primary function is to provide the environment needed for the housing of a family unit and to provide spaces for the performance of income-generating productive activities, through the production and/or sale of commercial products. Also referred to as: home with integrated commerce, factory homes, or community shops.

(Source: CONAVI)

Proximity: It refers to the ease of connection to a point or neighborhood unit, or to the remaining neighborhood/city units, through a public transit network, road network, or pedestrian and cycling networks. It is expressed in terms of trip distance and time. It refers to the trip distance and time between an origin and a destination.

(Source: DOTS® Manual)

Public space: A public space is a point for meetings, exchange and transit within the city. It is defined as a place where any individual has the right to enter or stay without being excluded for personal, social or economic reasons. Residents can find themselves on streets, parks, squares and other public spaces as equals and sharing the use of a common area.

(Source: Public Space and Public Life Study, p.32.)

Recreational path: In many Mexican cities, roads are closed on every Sunday for the exclusive use of pedestrians, skaters and cyclists, which encourages families to take-up cycling through its recreational uses.

(Source: Prepared by EMBARQ)

Renewable energy: It refers to energy whose source is a natural phenomenon, processes or materials that can be transformed into energy through human intervention, and that are naturally re-generated and continuously available. Renewable energy sources last thousands of years. Renewable energy can be classified into several types: by the primary origin of the energy, by the level of technological development, and by their application.

(Source: SENER/GTZ)

Risk Atlas: A comprehensive information system, which allows for the establishment of databases and for the drafting of hazard analyses, vulnerability and risk of disaster at a national, regional, state and municipal scale; with the goal of generating maps and geographic information systems. This allows for the possibility of simulating disaster scenarios, issue recommendations for timely decision-making, and to establish effective preventive and mitigation measures. By 2012, over 80% of the States from the Mexican Republic and 60% of the Metropolitan Areas had a Risk Atlas.

(Source: Governance Department, SEGOB)

Road network: Set of geographical spaces that structure and integrate the use of space, and are primarily destined for vehicular and personal traffic, as well as for the hosting of facilities.

(Source: SEDESOL. Urban road network)

Setback: It refers to the section at the perimeter of a lot or area, which is free of buildings, and measured from the property limits. It may exist at the front, side or back, as established by regulations.

(Source: Prepared by EMBARQ)

Sustainable Transportation-Oriented Development (DOTS®): Urban planning and design model centered on public transit, which advocates for compact and high density neighborhoods, and which allow residents to enjoy a diversity of uses, services and public spaces that favor social interaction.

(Source: DOTS® Manual)

Traffic calming: Measures created to regulate vehicular speed and behavior within an area. It is promoted as mobility that is kinder and fair to all transportation systems, and with high pedestrian priority.

(Source: DOTS® Manual)

Urbanization: It refers to the result of a process in which the land is equipped with infrastructure services destined for private and public use.

(Source: DOTS® Manual)

Urban footprint: It refers to a continuously urbanized area, which holds a direct, constant and intensive socio-economic interaction with the city, without being subject to the city's administrative boundaries. Often referred to as built up area. (Source: ZMVM, LCM Mexico City Laboratory, 2000). Term that refers to the size and form of a city or population center on its territorial surface.

(Source: DOTS® Manual)

Urban furniture: It refers to all those complementary urban components, which serve to support the infrastructure and facilities, and which reinforce the city image, such as: fountains, benches, garbage bins, planters, signaling, nomenclature, and others. By definition, they might be fixed, permanent, mobile, or temporary.

(Source: CONAVI (2008), Criteria and indicators for sustainable residential developments, p.47)

Urban green area: All surfaces covered with vegetation, be it natural or induced, within an urban territory.

(Source: Department of the Environment of the Federal District, SMA)

Urban infrastructure: It refers to public or private interventions, whose purpose is to prepare the spaces for urban use. They function as support for the development and operations of activities, they are needed for the structural organization of the city. Among them we find, infrastructure for roads, transit, energy and sanitary services.

(Source: DOTS® Manual)

Urban landmark: It refers to a point of reference within the city, which might not be entered by the observer and is by definition, unique, easily distinguishable from the context and useful to help people navigate an urban environment.

(Source: Kevin Lynch)

Urban space: It refers to spaces classified as such by the Development Program, designated for having infrastructure, facilities and services.

(Source: CONAVI (2008), Criteria and indicators for sustainable residential developments, p.47)