Green Infrastructure

Secretariat of the Environment of Mexico City
Together with several peripheral municipalities, it constitutes one of the largest metropolitan area in the world, home to over 22 million inhabitants.

9.2 million inhabitants in the city

The city with the highest population density in the country: 5,996 hab/km²

1,486 km²

It sits on one of the Valley of Mexico’s four basins. A few centuries ago a fragment of its territory was settled upon a lake system.
### Causes and Consequences

<table>
<thead>
<tr>
<th>CAUSES</th>
<th>CONSEQUENCES</th>
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<tbody>
<tr>
<td>Insufficient urban planning</td>
<td>• Territorial inequality</td>
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<tr>
<td>Urban sprawl</td>
<td>• Loss of biodiversity and ecosystems.</td>
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<td>Irregular settlements</td>
<td>• Presence of invasive species.</td>
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<td>Deforestation</td>
<td>• Loss of productive agricultural areas.</td>
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<td>Illegal extraction from protected areas</td>
<td>• Steep slope soil erosion.</td>
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<td>Wildland fires</td>
<td>• Soil nutrient decline.</td>
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<td>Inappropriate residue management</td>
<td>• Air, water and soil pollution.</td>
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<td>• Fragmented green areas.</td>
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<td>• Overexploited aquifers.</td>
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<td>• Groundwater depletion.</td>
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<td>• Loss of groundwater discharge areas for the replenishment of aquifers.</td>
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<td>• Increasing floods</td>
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</table>

### Loss of Environmental Services

Greater vulnerability to the effects of climate change:

1. Increasing heat islands
2. Longer / increasingly frequent drought seasons
3. Floods
Green Infrastructure is a carefully researched and laid out network connecting several green and blue spaces, both natural and seminatural, present in both rural and urban settings. It’s a milestone in urban development planning, and is key to:

- **Biodiversity** conservation.
- **Adaptation** to and **mitigation** of the effects of climate change (carbon capture and storage, mitigation of the effects of heat islands).
- **Risk management**, including reduction of flooding and overland flow.
- Increasing the **amount and quality** of green spaces.
- **Restoration** of modified natural spaces.

**Characteristics of the Green Infrastructure Network:**

- **Multi functionality**
- **Diversity**
- **Multiscale**
- **Resilience**

**Eight Regions:**

1. **Northern Urban Green Areas**
2. **Urban Ravines**
3. **Center-Western Urban Green Areas**
4. **Center-Eastern Urban Green Areas**
5. **Wetlands**
6. **Eastern Urban Green Areas**
7. **Rural-Urban Transition**
8. **Natural Forests**
A Tool for Optimum Territorial Planning that will bring together and articulate the efforts of the scientific community, the academy, the private sector, government agencies, and citizenry with proposals, strategies and actions aimed at improving the living standards of all inhabitants of a more sustainable and resilient city with GREEN INFRASTRUCTURE PROJECTS.

**PROGRAMMES**

1. **DESIGNING OF PARKS:** creation of green areas in the city’s marginalized zones.
2. **RIVERS RECOVERY:** restoration and cleaning up of the rivers within the city.
3. **CYCLING INFRASTRUCTURE:** rehabilitation of existing bike paths, as well as setting pop-up bike lanes to enforce safe mobility during the Covid-19 pandemic.
4. **SOCIO-ENVIRONMENTAL REHAB OF CONSERVATION AREAS:** Involve the public in taking care of conservation areas as well as enjoying and knowing them.
5. **GREEN CHALLENGE:** Greening up the entirety of Mexico City’s public spaces with **10 million new Trees and Other Plants** during 2019 and 2020 (parks, traffic islands, plazas, sidewalks, and other aforementioned spaces). **We have already achieved 20.7 million plants and we will reach 25 million this year**
Revegetation of the City:

- Secretariat of the Environment
- Secretariat of Public Works and Services
- General Coordination of Mexico City's Water System
- “Mayors” (equivalent to municipalities)

Headway & Goals

- Over 20.7 million specimens have been planted since 2019
- By the end of 2020 approximately 25 million trees, shrubs, herbaceous and groundcover plants, will have been planted during 2019, 2020 and 2021
- Compliance with criteria for the diversification of plant strata
Growing Parks/
“Sembrando Parques”

1. National Canal Linear Park
2. Grand Canal Linear Park
3. Eje 6 Sur Green Corridor
4. Aragón State Park (Urban Forest)
5. Chapultepec Park (Urban Forest)
6. Chapultepec Avenue
7. Cuitláhuac Park
8. Cantera Park
9. Periférico Oriente Green Corridor
10. Leona Vicario Park
11. “El Vivero” Sports and Recreation Center

Natural Protected Areas in urban zones:

12. Mexico City Ecological Park
13. Sierra de Guadalupe
14. Sierra de Santa Catarina
15. Cerro de la Estrella
16. Xochimilco Ecological Park

Natural Protected Areas
Grand Canal Linear Park

BEFORE

AFTER
Cantera Park

BEFORE

AFTER

AFTER

AFTER
Chapultepec Park
(urban forest)

Restoration and sanitization
of the 3rd section
Restoration and Sanitation of Rivers, Ravines and Water Bodies
Magdalena River Integrated Project
Segments for All-Encompassing Recovery 2020-2021

Magdalena River
1. Soil and water conservation and natural resources management of the catchment area.
2. Dinamo-Cañada Natural Park (property of Frisa).
3. Las Cañadas –Anzaldo
   A. Urban spaces with development potential
   B. Las Cañadas Ex-hacienda
4. Recovery of Panzacola-Av. Universidad corridor

Eslava River
1. Incorporation of the streambed to the urban surroundings
2. Recovery of public spaces
3. Cleaning days and consensus dynamics
SEGMENT 7-A. Integrative management of street trees and restoration of the river bank landscape

Cross-Section Av. Universidad

Cross-Section Callejón del Río
Restoration of Ravines

Integrative Management of the Western Ravine System

- **Investment**: MXN $15 million
- **Community** cleanup and management day to encourage *appropriation*
- Wastewater management
- Development of financial alternatives
- Legal framework strengthening
Conservation Areas
Socio-Environmental Rehab of Natural Protected Areas

- DNA Paris Design Awards 2020 - Sierra de Santa Catarina
- IV Bienal Latinoamericana de Arquitectura de Paisaje - Mexico City Ecological Park
Neighborhood Parks

1. **Urban gardens** growing of fruit, vegetable, medicinal and ornament plants.
2. **Pollination, rain and spontaneous gardens.**
3. **New playgrounds and recreational areas for children.**
4. **Multi-functional spaces:** environmental education, book clubs, poetry, painting, music and dance workshops.
5. **Refurbishment and revegetation** of sidewalks and main pathways; improvement of street furniture.
6. **Recreational / Leisure Route** outdoor gym, parkour, calisthenics and sports facilities
7. **Community organization** for collaborative management

16 spaces in the following districts:
- Benito Juárez
- Miguel Hidalgo
- Álvaro Obregón
- Cuajimalpa
- Tláhuac
- La Magdalena Contreras

Currently under construction
Goal: 57,000 hectares/140,850 acres
Planned investment: MXN $62 million
Projects on roadways managed by the Secretariat of Public Works and Services
Pollinator Gardens with Native Species

- Productive reconversion of nurseries
- Production of more than 80 native plant species
- Training programs for municipalities and private sector
Gardens for life:
a program to become “pollinator” through gardening training, with a gender perspective
Production in Tree Nurseries
• Valley of Mexico **native pollinators seed** and plant harvesting (shrubs, herbaceous and stonecrops)

• Production of native species at the Nezahualcóyotl and Yecapixtla **plant nurseries for urban areas**

**PRODUCTION GOAL FOR 2020-2024**

<table>
<thead>
<tr>
<th>Year</th>
<th>Plants</th>
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<tbody>
<tr>
<td>2020</td>
<td>40,150</td>
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<tr>
<td>2021</td>
<td>53,250</td>
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<tr>
<td>2022</td>
<td>57,355</td>
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<tr>
<td>2023</td>
<td>63,380</td>
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<tr>
<td>2024</td>
<td>69,720</td>
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</tbody>
</table>

**283,855**

**NATIVE POLLINATOR PLANTS**
Targeted Pollination Groups and the Color of the Flowers

Psychophily
- White, red, orange, yellow and mauve flowers

Sapromyophily
- Purple, red, brown or spotted flowers.

Myophily
- White, yellow and greenish flowers

Cantharophily
- Cream, green and faded colors

Chiropteronophil
- White, green / beige, faded colors

Ornithophily
- Purple, red, pink and orange flowers

Melittophily
- Pink, purple, blue, white and yellow flowers

Sphingophily
- White, green / beige, pale green flowers

Phalaenophily
- Cream, yellow and greenish flowers
Mexican Bush sage  
*Salvia leucantha*

Mexican Sage  
*Salvia mexicana*

Baby Sage  
*Salvia microphylla*

Mexican Honeysuckle  
*Justicia spicigera*

Chile shrubs  
*Capsicum*

Colorin  
*Erythrina americana*

Poinsettia  
*Euphorbia pulcherrima*

Firecracker bush  
*Bouvardia ternifolia*
Chapultepec Park (Bosque de Chapultepec)

Tlaipan

Eje 10

Yecahuizotl (Natural Protected Area)
Pest and Disease Management in Trees

Assessment of Products for Mistletoe Management and Eradication

Control of mistletoe and other plagues
- Soil improvement
- Chemical and physical pruning
- Endotherapy

Struthantusspp mistletoe
Psittacanthussp mistletoe
Cladocoleaspp mistletoe
Phoradendron spp mistletoe
Substratum production to replace mountain soil extraction

Soil *improvers* and *conditioners*, and *substrates* – instead of mountain soil – produced with pruning and gardening residues for:

- Tree nurseries
- Fields
- Yards and planters
- Parks and other green areas
Thank you

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