Efficient cities through urban development

Simposium “Livable Cities” , Istanbul, Turkey.

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THE **NEW** CLIMATE **ECONOMY**

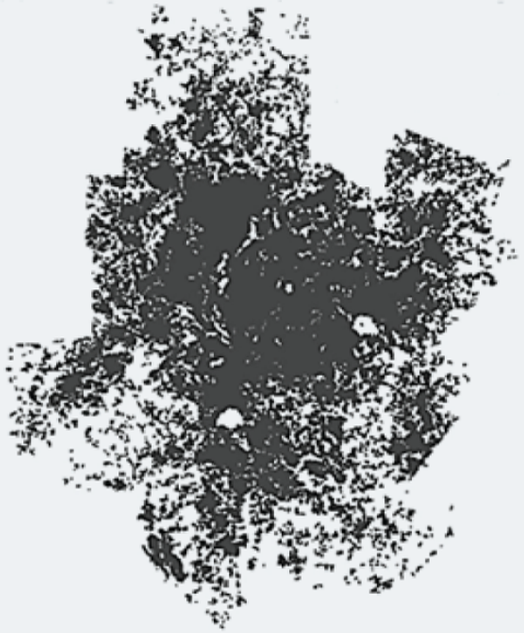
The Global Commission on the Economy and Climate

http://2015.newclimateeconomy.report/

Atlanta and Barcelona have similar populations but very different carbon productivity

Atlanta

Built-up area



Population	Urban area	Transport carbon emissions
2.5 million	**4,280** km^2	**7.5** tonnes CO_2/person (public + private transport)

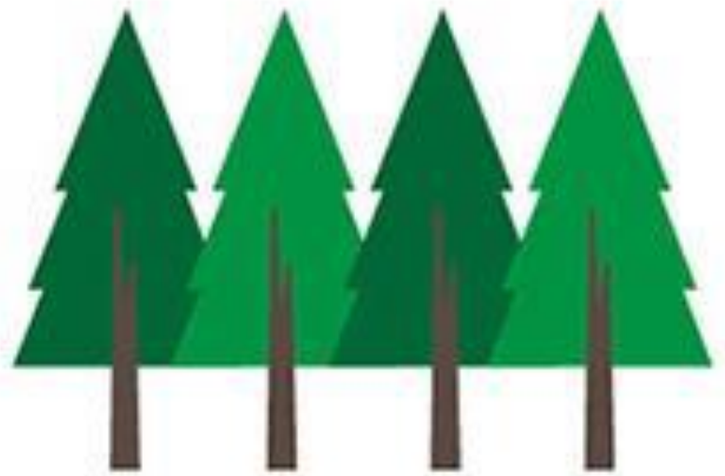
Barcelona

Built-up area

Population	Urban area	Transport carbon emissions
2.8 million	**162** km^2	**0.7** tonnes CO_2/person (public + private transport)

There are major opportunities in three key economic systems:

CITIES



LAND USE

ENERGY

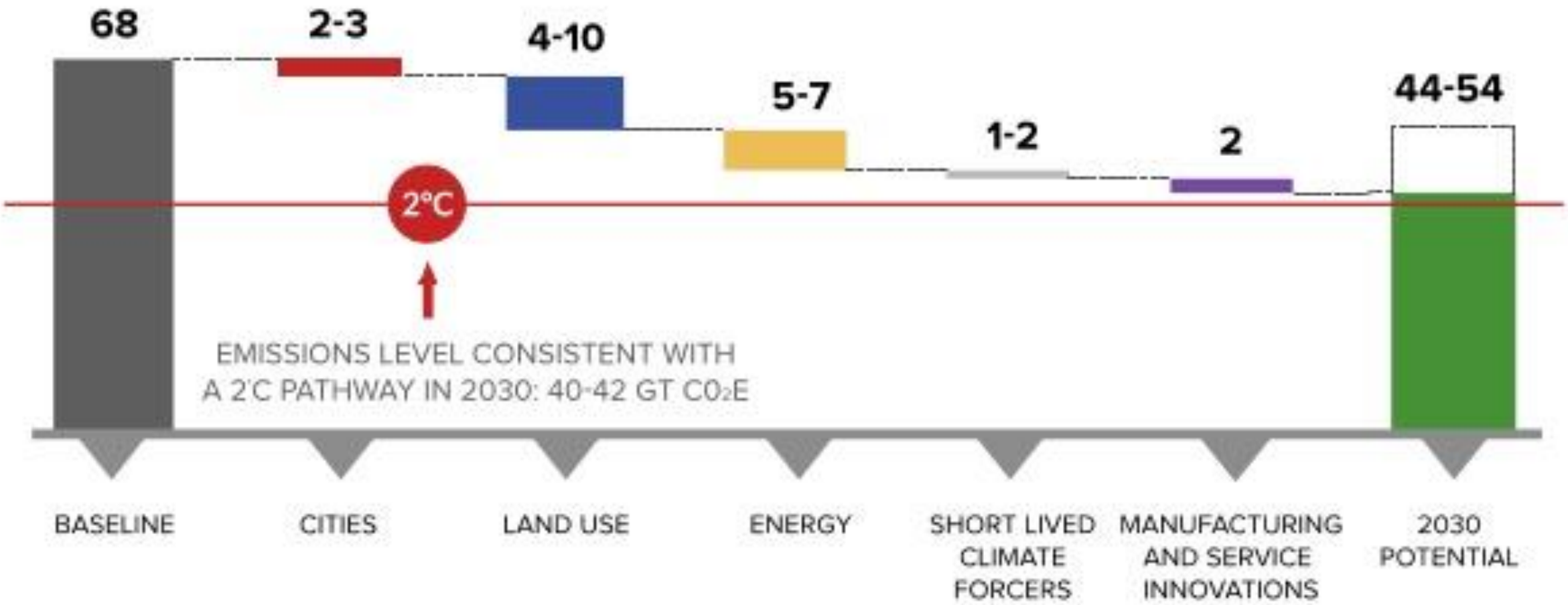
THE **NEW** CLIMATE **ECONOMY**

The Global Commission on the Economy and Climate

POLICIES: Actions with economic benefits could deliver most of the greenhouse gas abatement needed by 2030

GHG EMISSIONS AND ABATEMENT POTENTIAL FROM SELECTED MAJOR LEVERS: 2030

Gigatonnes of CO_2 equivalents



Source: Emissions estimates: IPCC AR5; New Climate Economy analysis based on expert input and multiple data sources

THE 10 POINT GLOBAL ACTION PLAN

1. Integrating climate into core economic decision-making processes.

2. Strong, lasting and equitable international climate agreement.

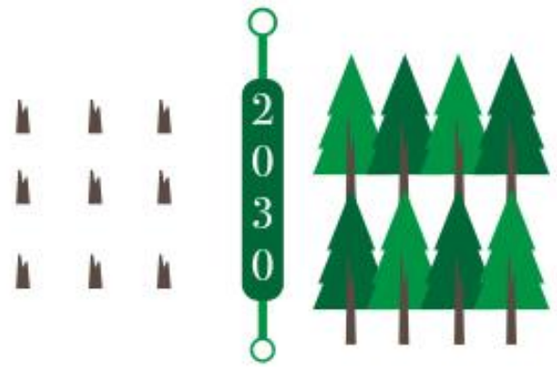
3. Phase out subsidies for fossil fuels, agricultural inputs and incentives for urban sprawl.

4. Introduce strong, predictable carbon prices as a part of fiscal reform.

5. Reduce the capital cost of low carbon infrastructure investment.

6. Increase innovation in low carbon technologies.

7. Urban development - compact and connected.



8. Halt the deforestation of natural forests by 2030.

9. Restore at least 500 million hectares of degraded forest and agricultural land.

10. Accelerate the shift away from polluting coal-fired power generation.

For further information and the full document please see: www.cisl.cam.ac.uk/clg

design: www.digitalink.eu

$17 trillion USD

Savings in global infrastructure spending to 2050 from more **compact, connected urban development**

Source:New Climate Economy

How can we seize it?

Construct new buildings to higher heating efficiencies

Retrofit old buildings for reduced heat intensity

Install efficient lighting and appliances

Install building-mounted solar PV

Reduce motorised passenger travel activity

Expand rail and bus transport over cars and trucks

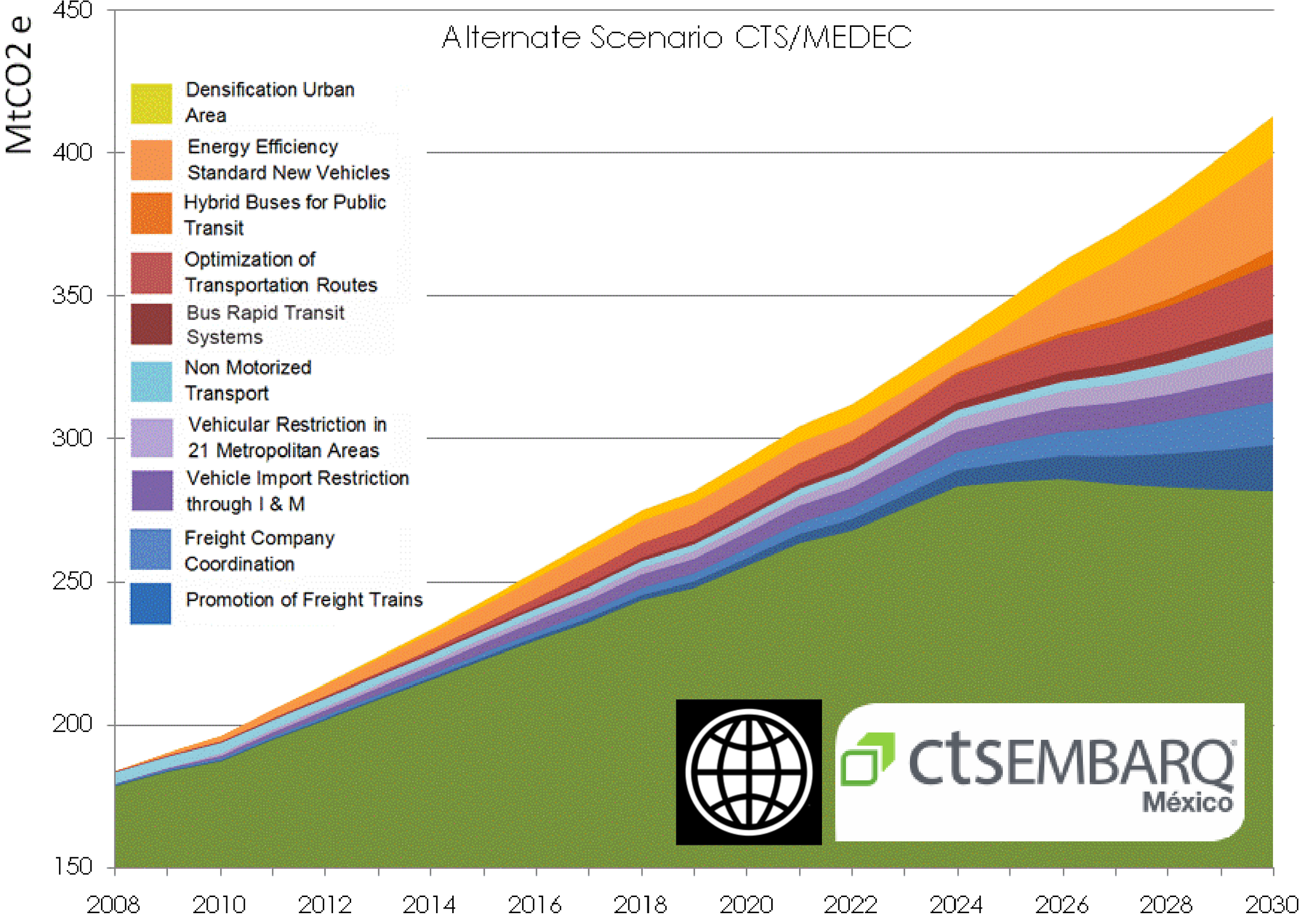
Adopt more efficient cars and electric vehicles

Improve freight transport logistics

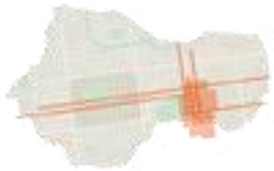
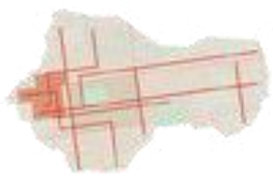
Improve global freight energy efficiency and increase electrification

Increase recycling rates in cities

Capture greater volumes of methane from landfills



Source: Mexico Carbon Emission Report, 2008

ESCALAS / ELEMENTOS	City	Neighbourhood	Neighborhood	Street
Public Transport				
Non motorized mobility				
Vehicle Demand Management				
Mix-used and efficient buildings				
Neighborhood centers and active ground floors				
Public spaces and natural resources				
Community involvement and identity				

Is it possible to make more efficient places?

3 cities, 3 urban forms

- *Horizontal low income housing*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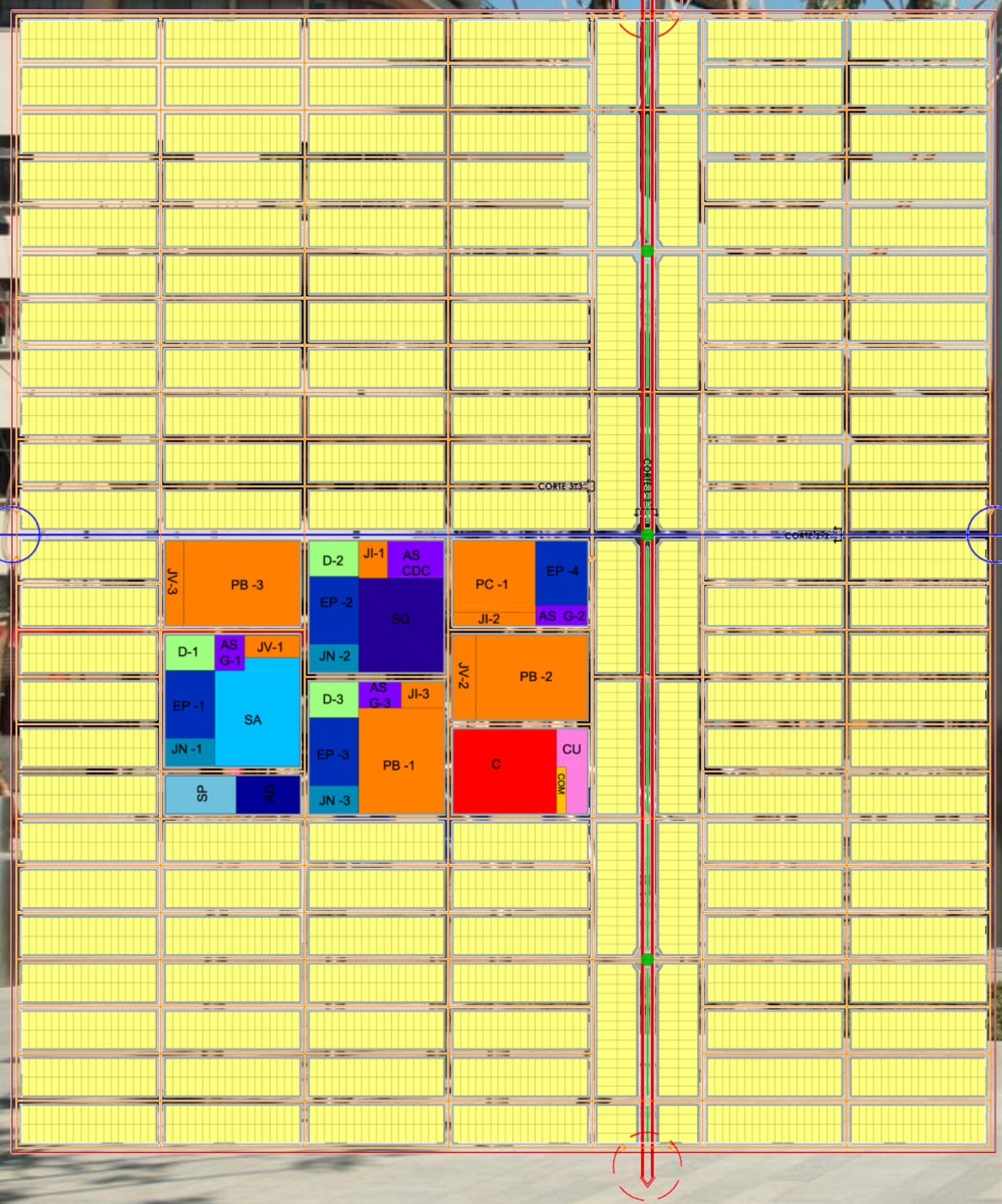
Current Urban Pattern

According with local regulation and urban plans



5,000 households

Density: *104 hab/ha.*

Mix-use: *less than 5%*

Streets: *40-25%, only 1/4 is for pedestrian*

Public Transport: *One stop, one access*

Housing: *One standard plot. 90m2*

Public space: *2.8 m2 per person*

Quality criteria

Relationship between urban development and mobility

Balance between public services

Connectivity: *Access to different destinations*

Distance to the center: *Services provision concentration in an specific area*

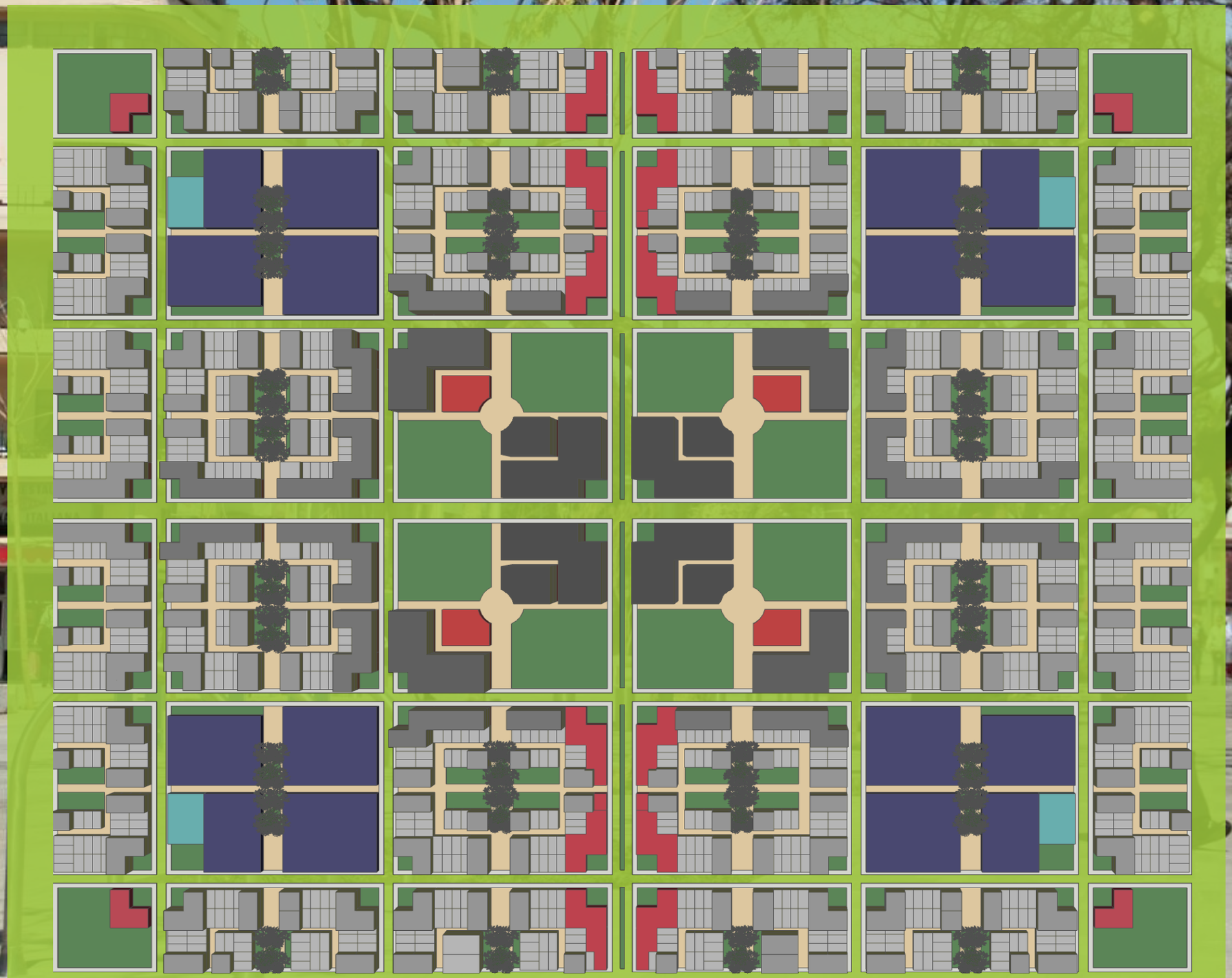
Balance between housing and work places

Mix-uses: *diversity and integration with public spaces*

Mobility for all: *Walking, biking, accesible and safe streets*

Proposed patter

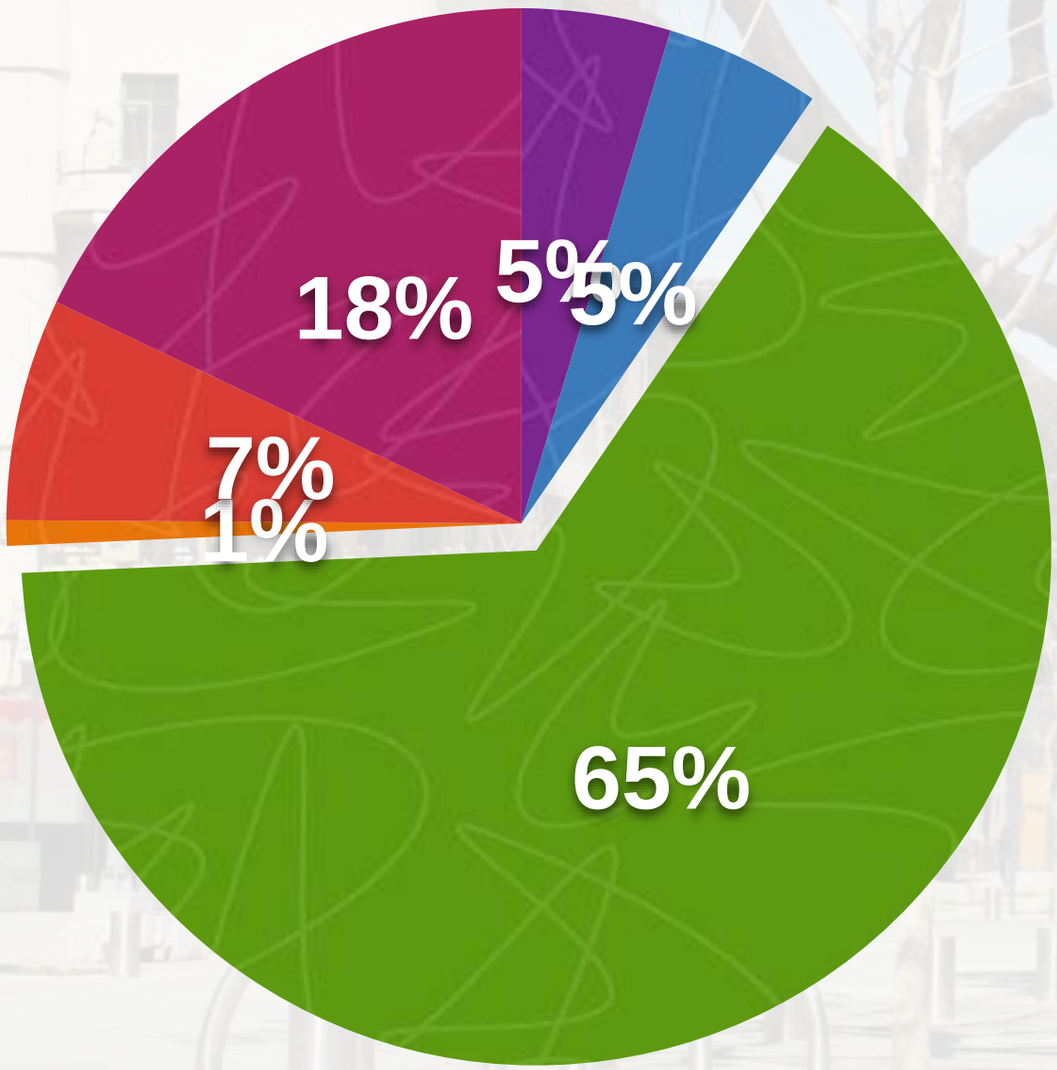
According with local regulation and urban plans



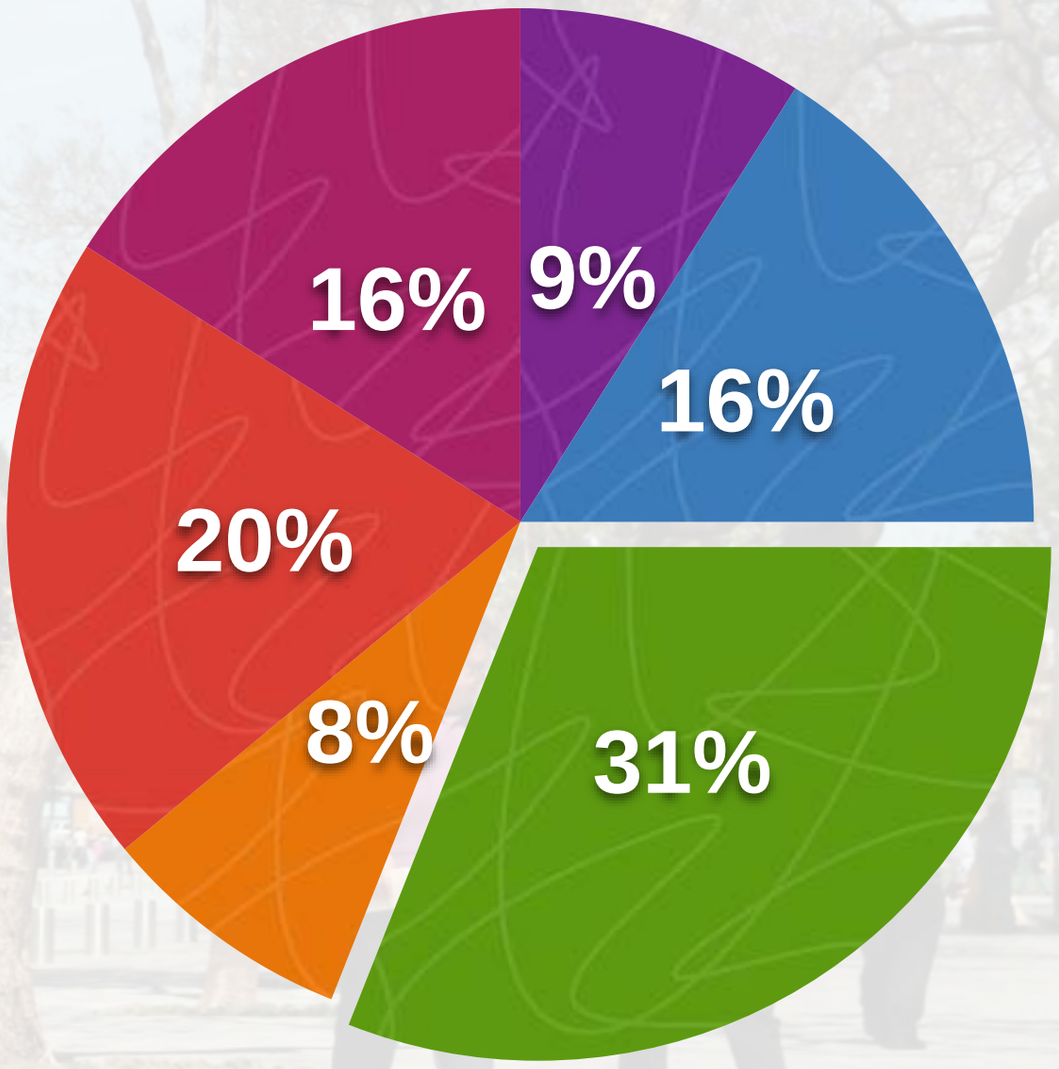
Proposed patter · land use distribution

According with local regulation and urban plans

Before



After



- Public Services
- Public Spaces
- Housing
- Mix-use

Zoning for housing

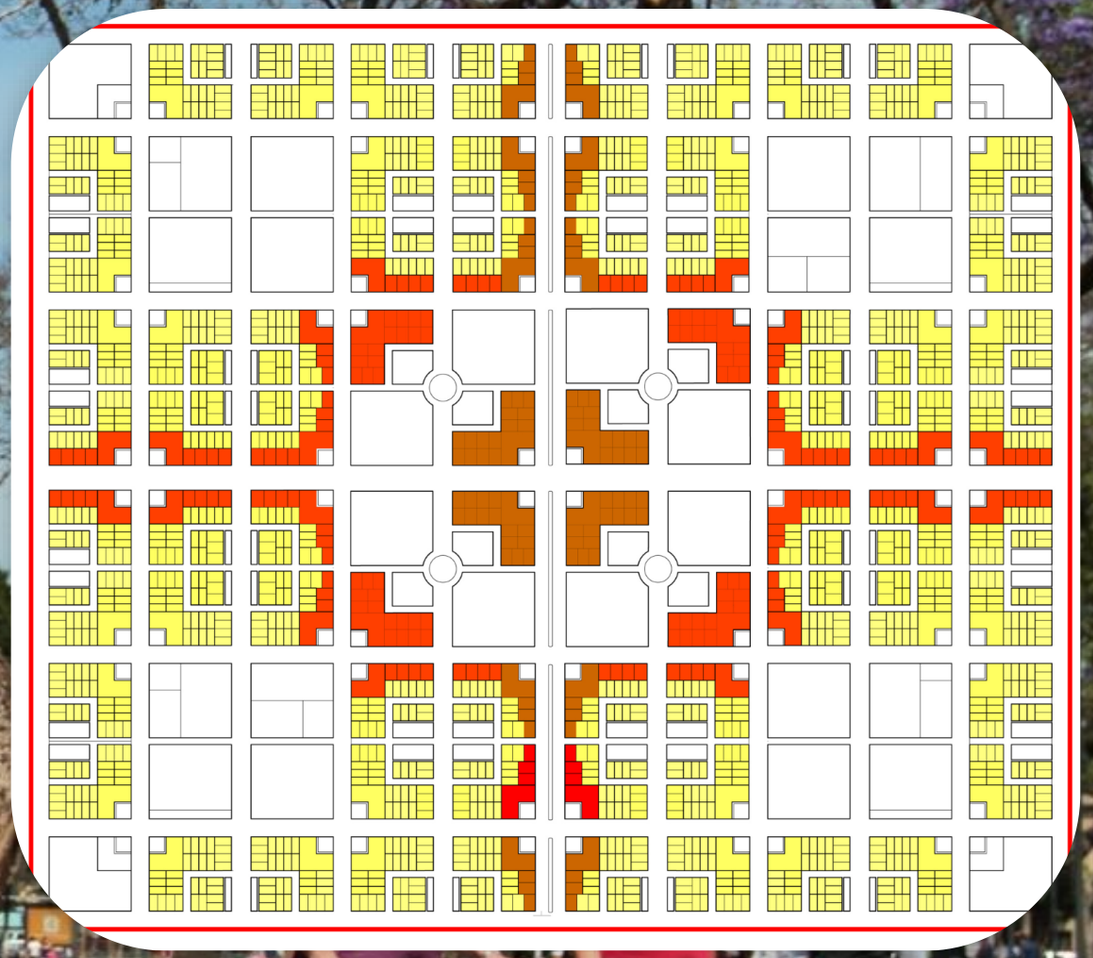
According with local regulation and urban plans

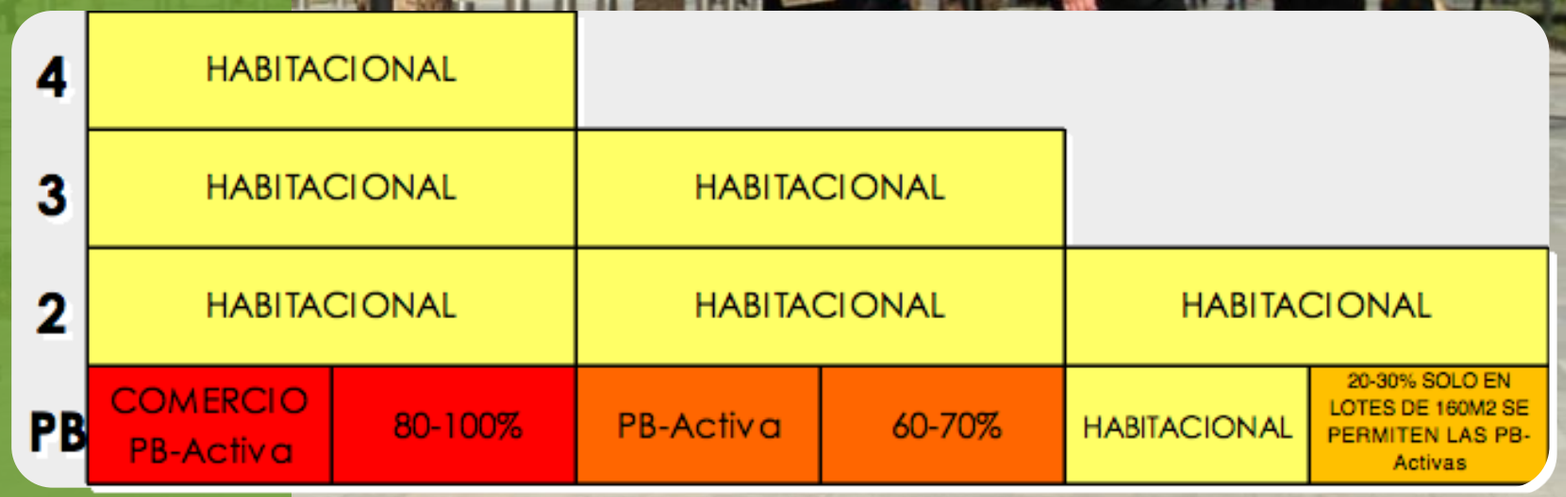
5,000 households

H2 · Condominium 2 floors: *40% free areas · 60m2*

H3 · Condominium 3 floors with commercial area: *40% free areas · 90m2*

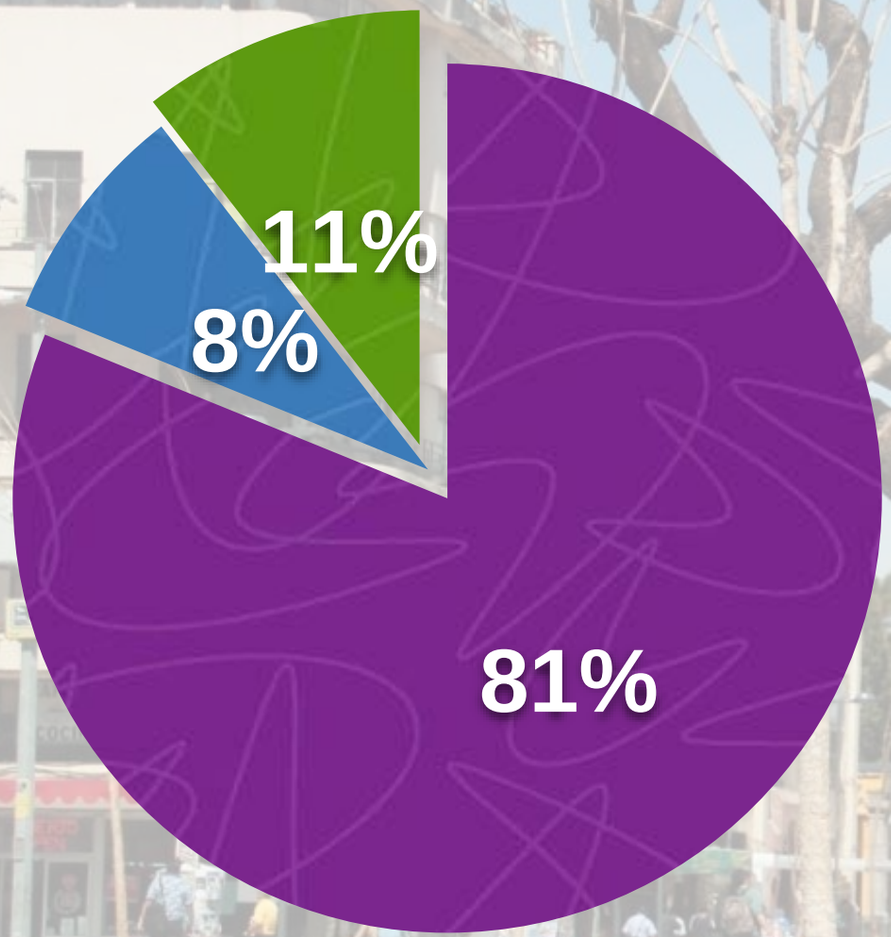
H4 · Mix-use (housing and commercial area) 4 floors: *40% free areas · 120m2*



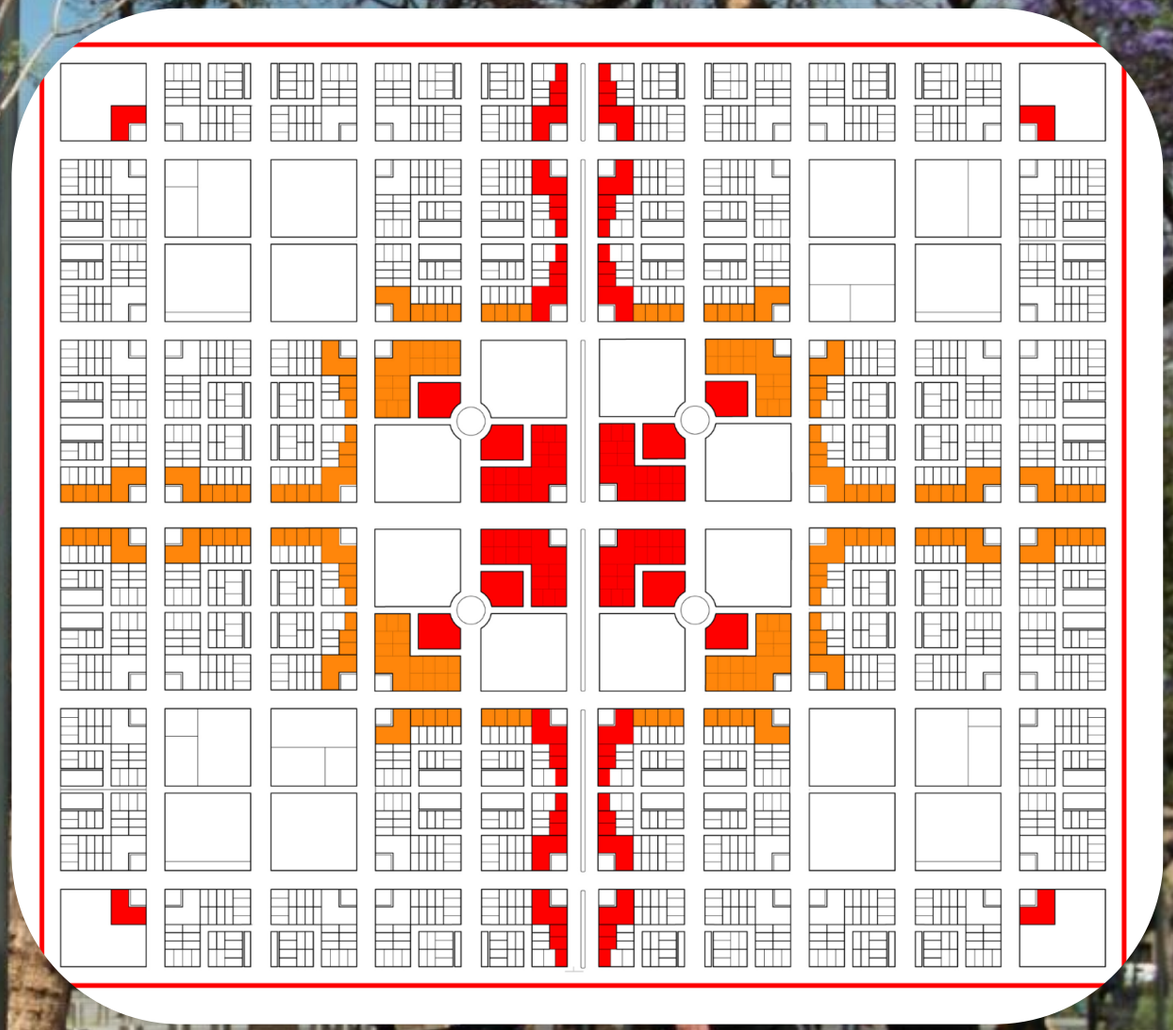


Mix-use: housing and commercial areas

According with local regulation and urban plans



- Housing
- Commercial areas and services
- Active ground floors



Public Services

According with local regulation and urban plans

Kindergarden

Elementary School

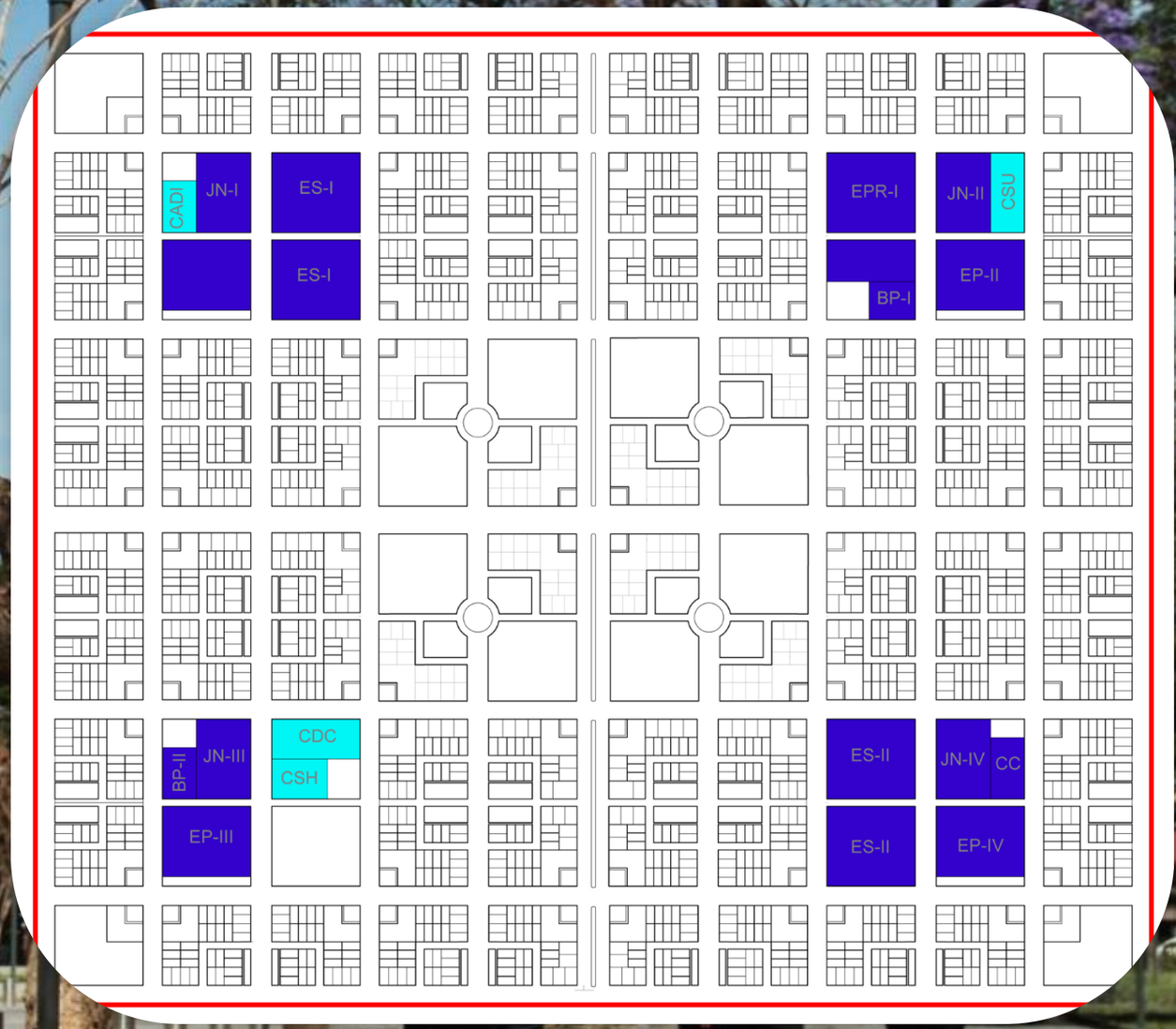
Highschool

Library

Arts and crafts

Health Center

Community Service



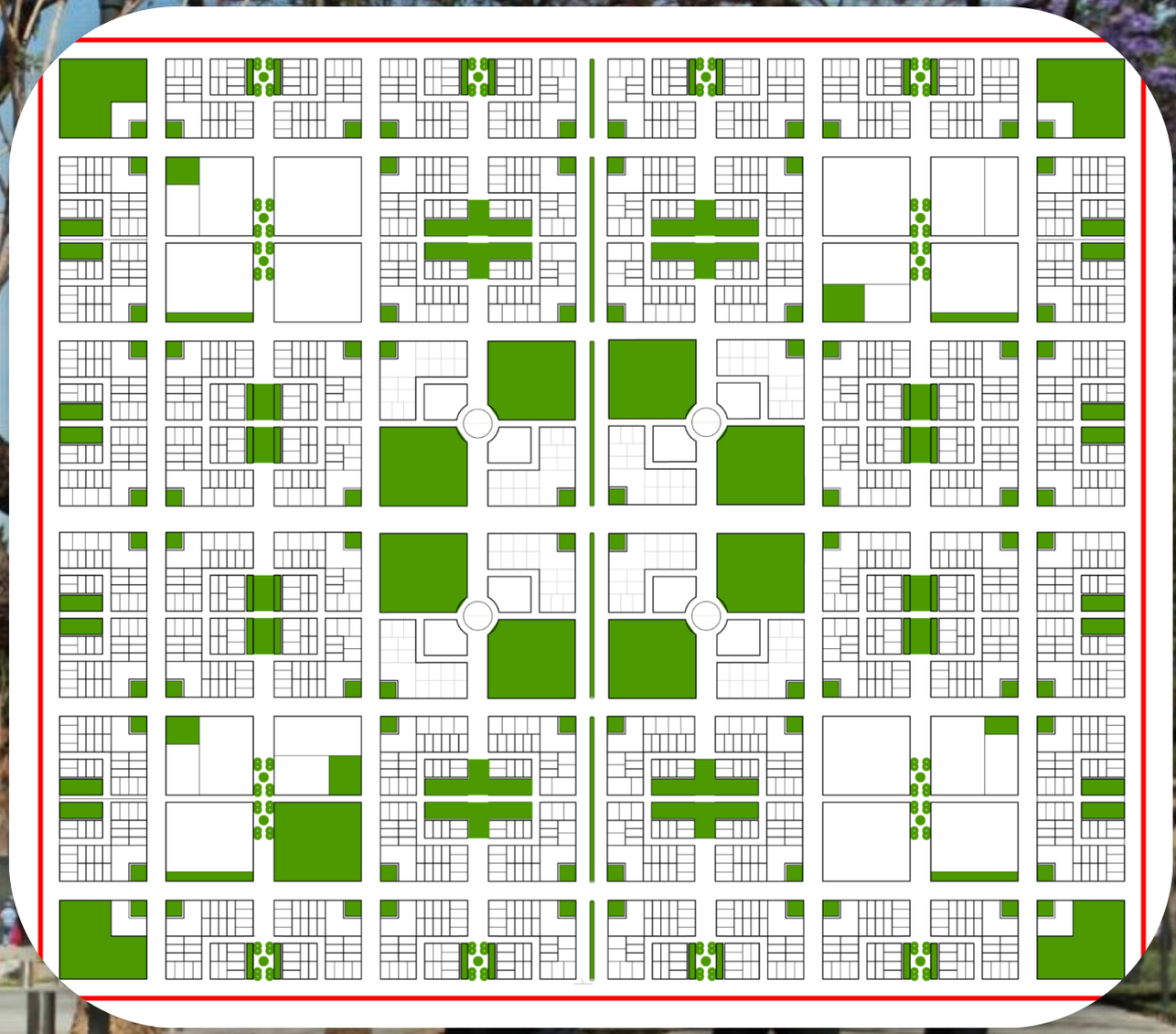
Public Spaces

According with local regulation and urban plans

From 2.6 m2 to 5.05 m2 per person

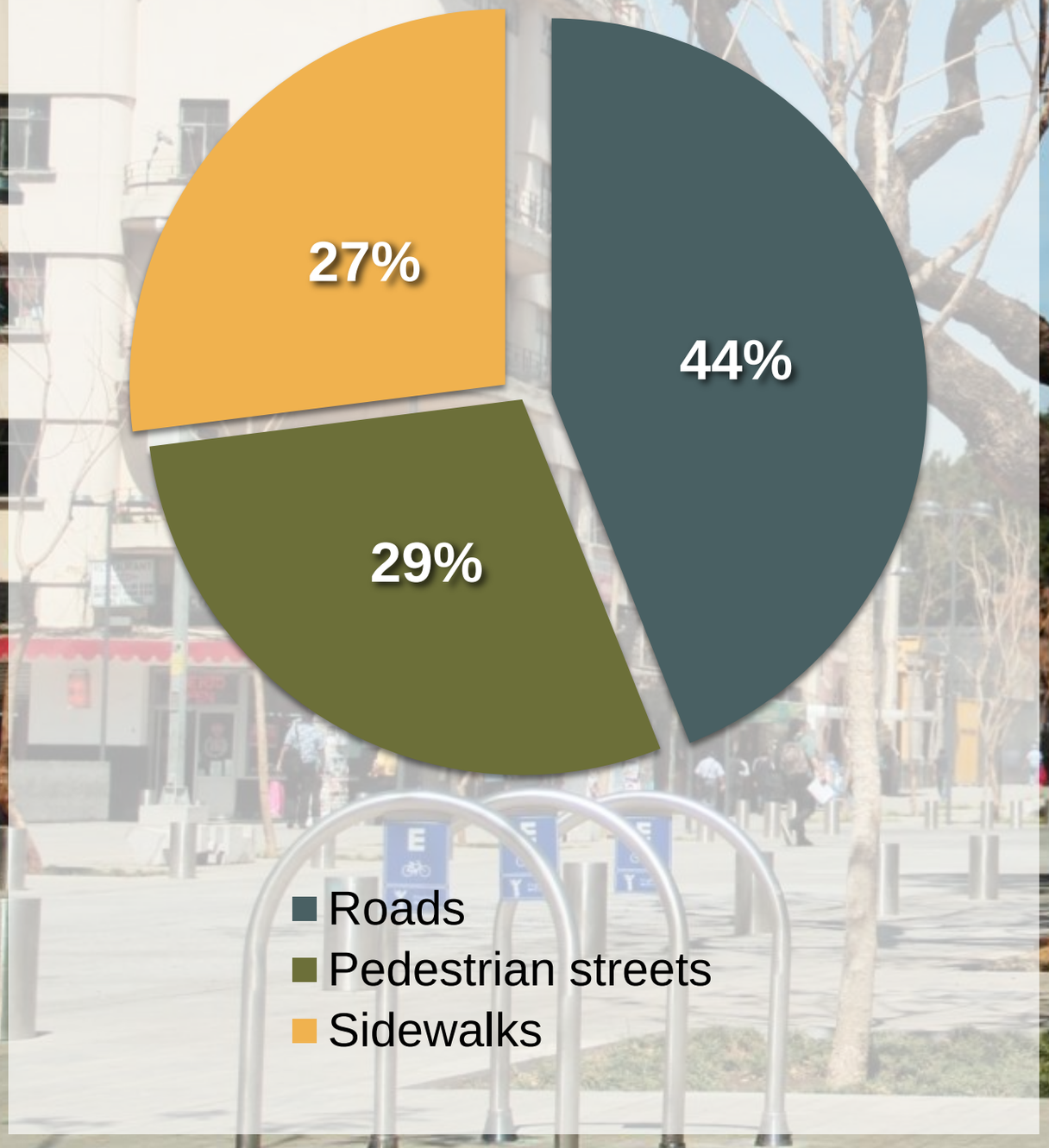
Including:

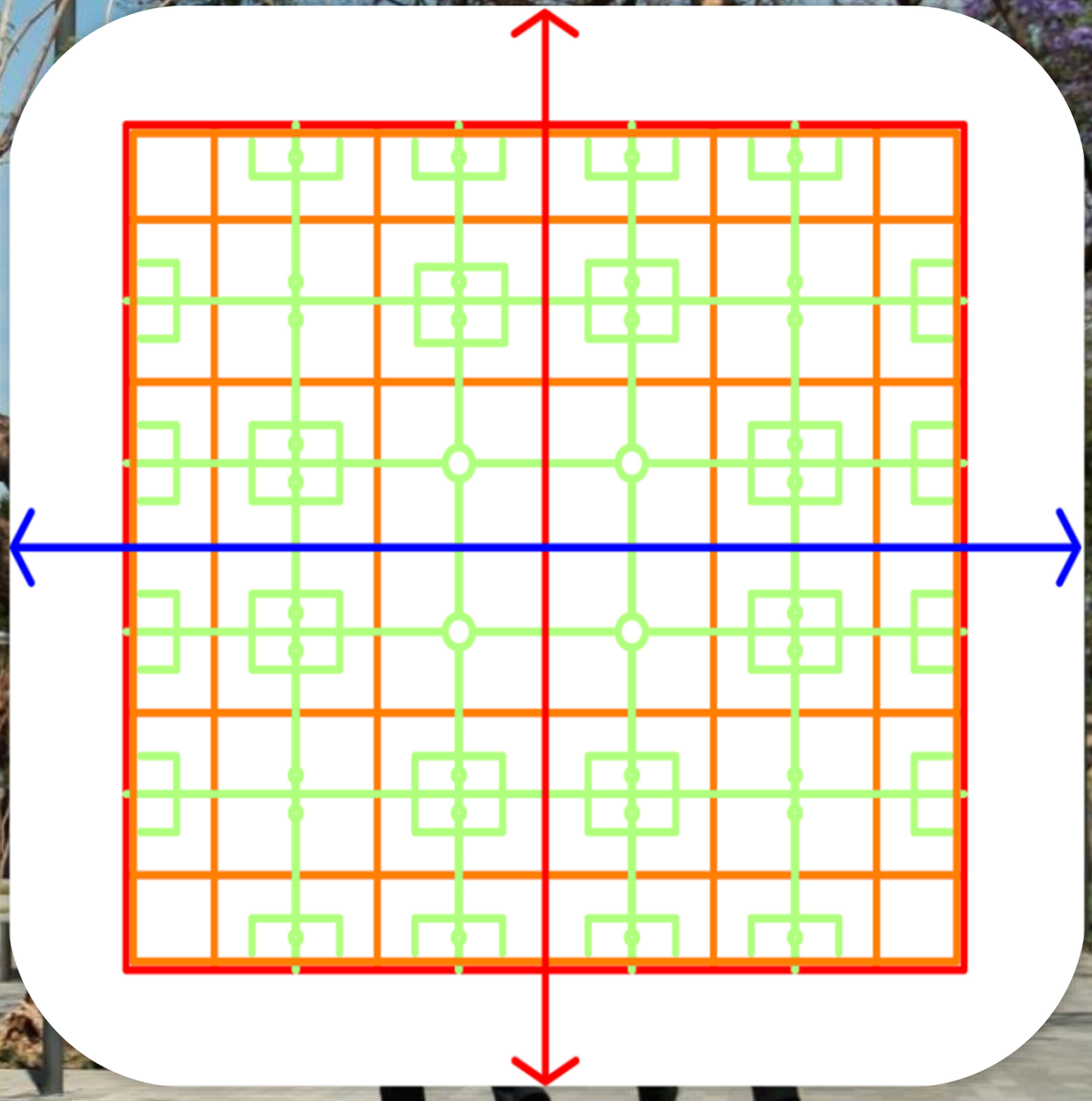
- **Public Garden**
- **Civic Center**
- **Sport facilities**



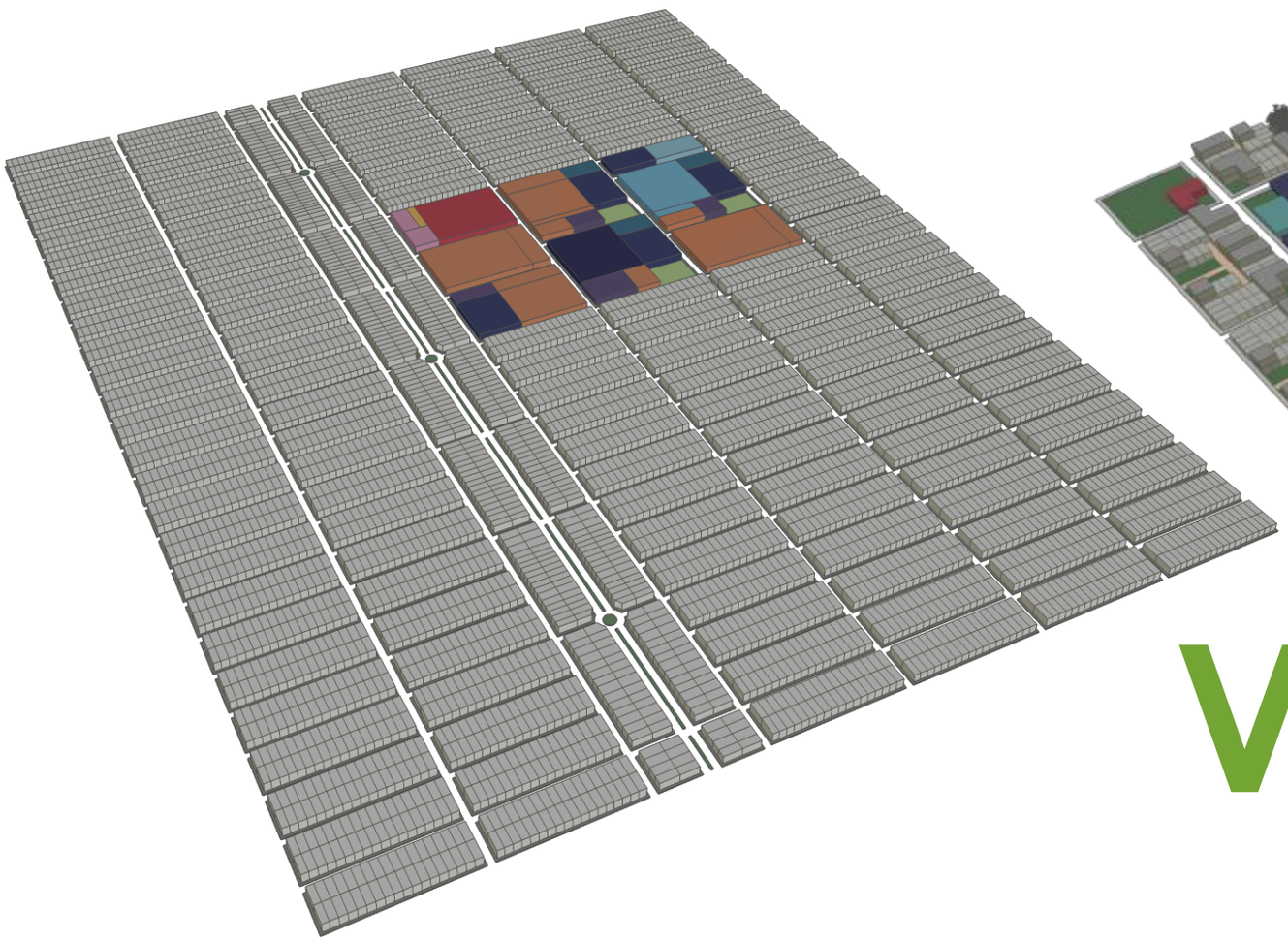
Road distribution

According with local regulation and urban plans

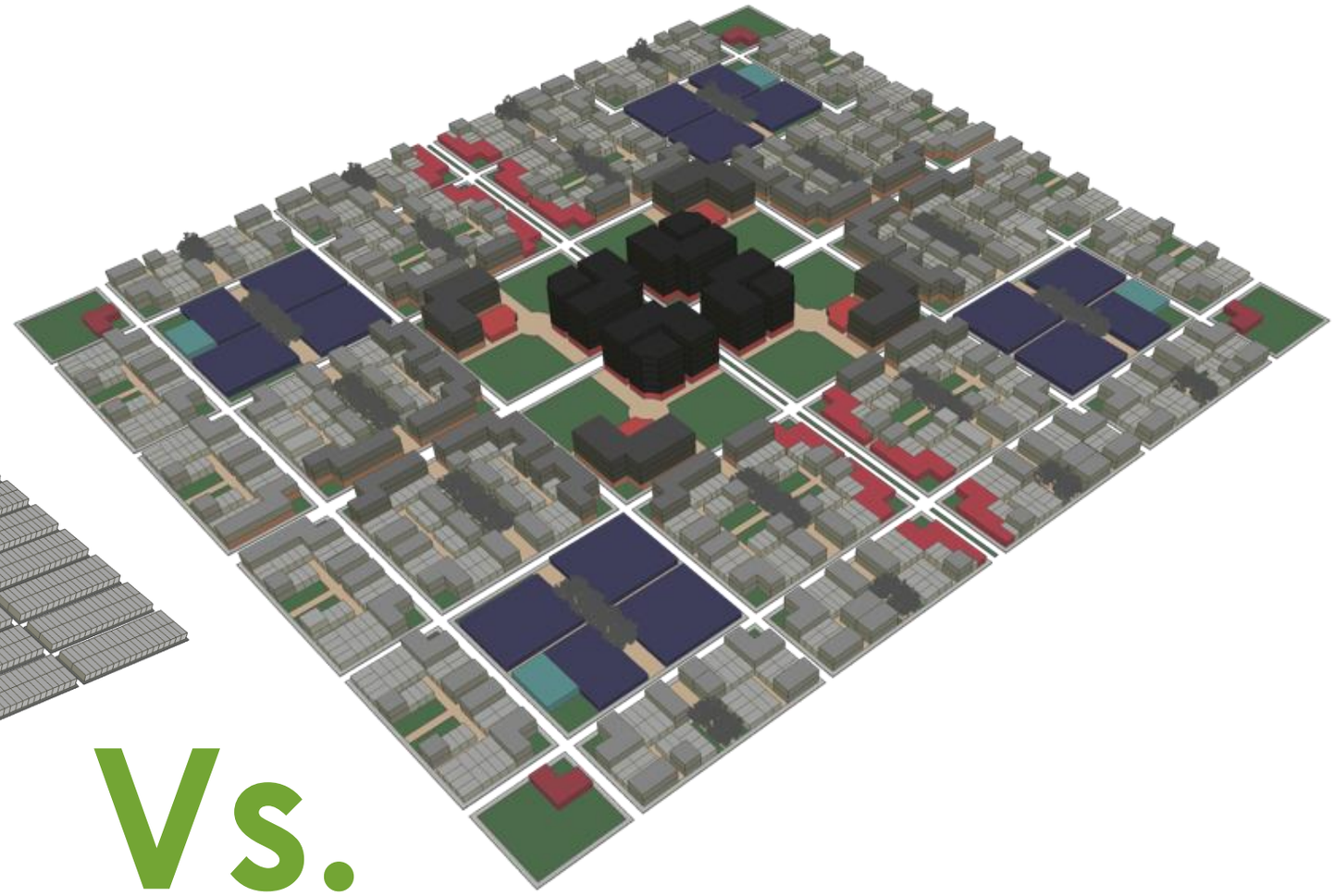




Comparing patterns



Vs.



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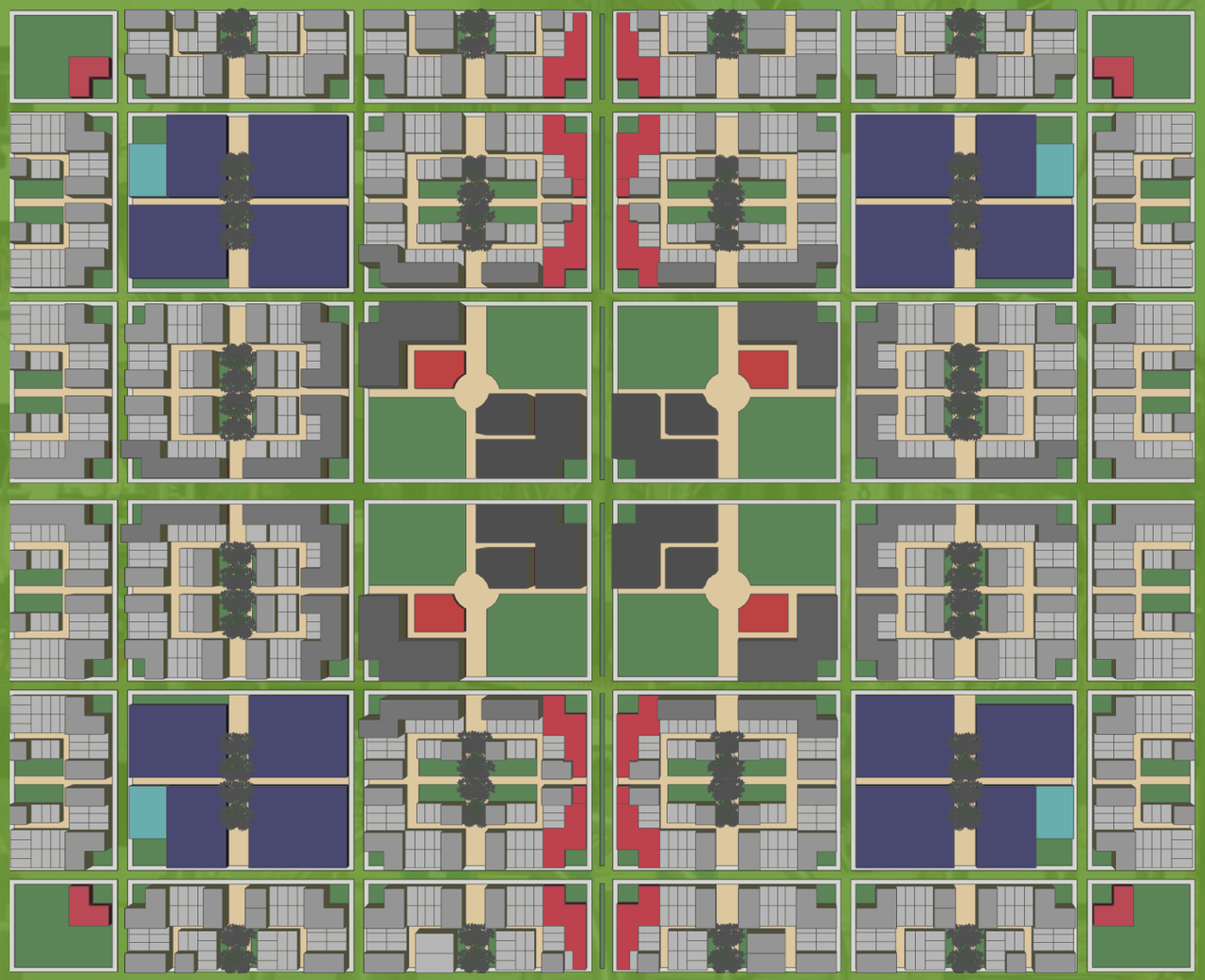
Current Urban Pattern

According with local regulation and urban plans

5,000 households



Density: *208 hab/ha.*

Mix-use: *20% (+15%)*

Streets: *50% complete streets*

Public Transport: *Stops every 300 meters*

Housing: *3 types: 60-90-120 m2*

Public space: *5 m2 per person every 500 m2*

Impacts

5,000 households

28% *less land use*

81% *more land for public services (including commercial areas, public spaces and services)*

4.4 *more employment opportunities*

2x *open public space per person*

14% *less road dedicated to private vehicles*

2x *more pedestrian streets and facilities*

12% *less carbon emission for construction*

15% *less construction cost for housing*

Lessons learned

- **Using eco- technologies can reduce 34% carbon emissions and 42% energy anual cost in housing maintenance.**
- **Local regulations request 15% more road surface to low income housing than high income neighborhoods.**
- **17 to 25% of low income housing is abandon or empty, due to distance to city center or areas of economic activities.**
- **National subsidies for building efficiency in housing do not apply for places and local surroundings.**

Local governments have the responsibility to influence over a more efficient and low carbon urban model for their communities through mix land use and zoning, building requirements, property taxes and transfers, provision of services, mobility investment decisions, economic and workforce development.

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