



CURITIBA, BRAZIL

A case study on Urban Planning and Management for Sustainability

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What does a city need to have in order to be⁴ successful in producing quality of life?

- a. Mandate and legal instruments
- b. Financial resources
- c. Vision & creativity
- d. Clear strategy
- e. A plan
- f. Institutional capacity to execute policies and enforce laws
- g. Information and data to support decision
- h. Leadership

Well Below
Average

Below
Average

Average

Above
Average

Well Above
Average

Guadalajara

Buenos Aires

Medellín

Belo
Horizonte

Curitiba

Lima

Montevideo

Mexico City

Bogotá

Monterrey

Brasília

Porto Alegre

Rio de
Janeiro

Puebla

São Paulo

Quito

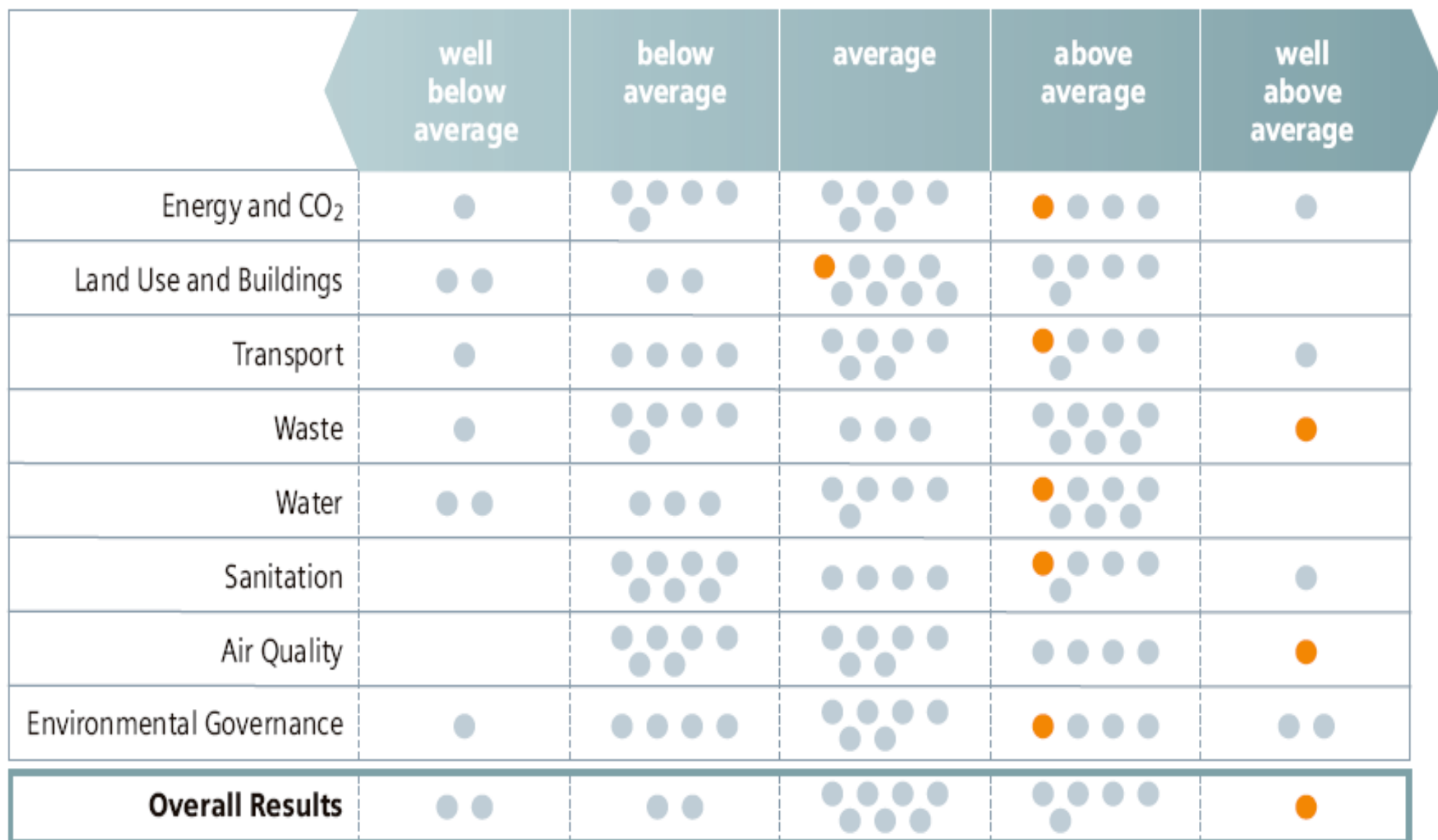
Santiago

17
CITIES
Siemens
Green Cities Index

Performance

● Curitiba

● Other cities



The order of the dots within the performance bands has no bearing on the cities' results.

Source: Latin American Green City Index. Assessing the environmental performance of Latin American Cities. A research conducted by the Economist Intelligence Unit, sponsored by Siemens.

CURITIBBA
Green City Index

**Environmental
Governance**

CO₂

Energy

10

8

6

4

2

0

**Air
Quality**

What policies
have resulted
into this
performance?

Buildings

**Waste &
Land Use**

Transport

Water

Green City Index

Environmental
Governance

Air
Quality

Waste &
Land Use

Water

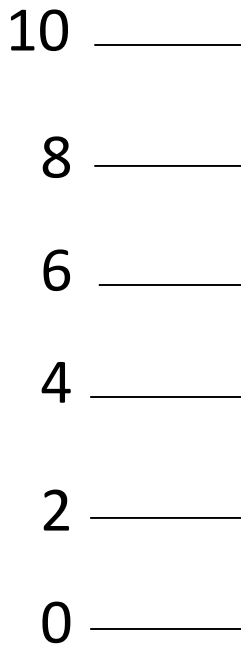
CO₂

Energy

Buildings

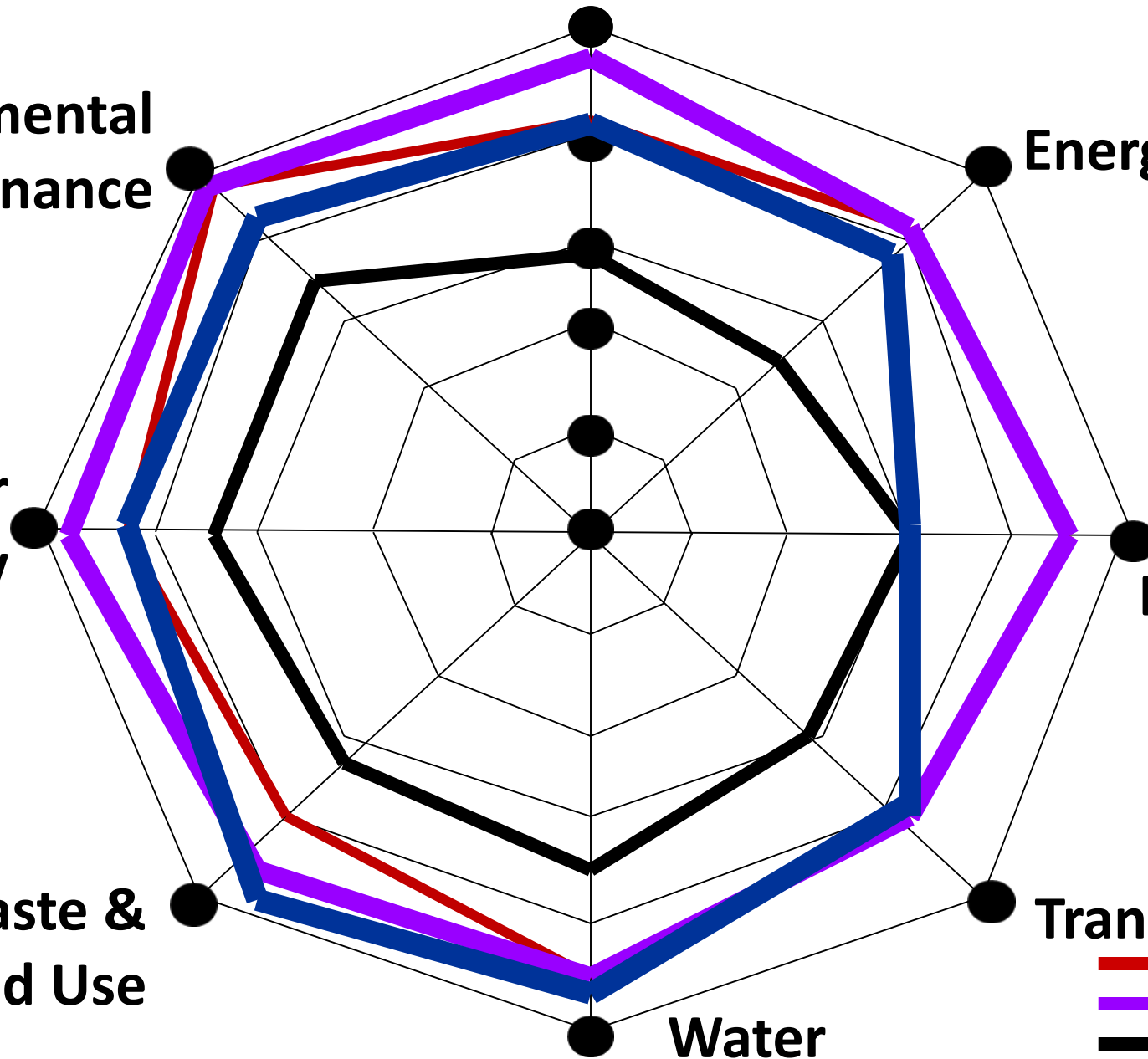
Transport

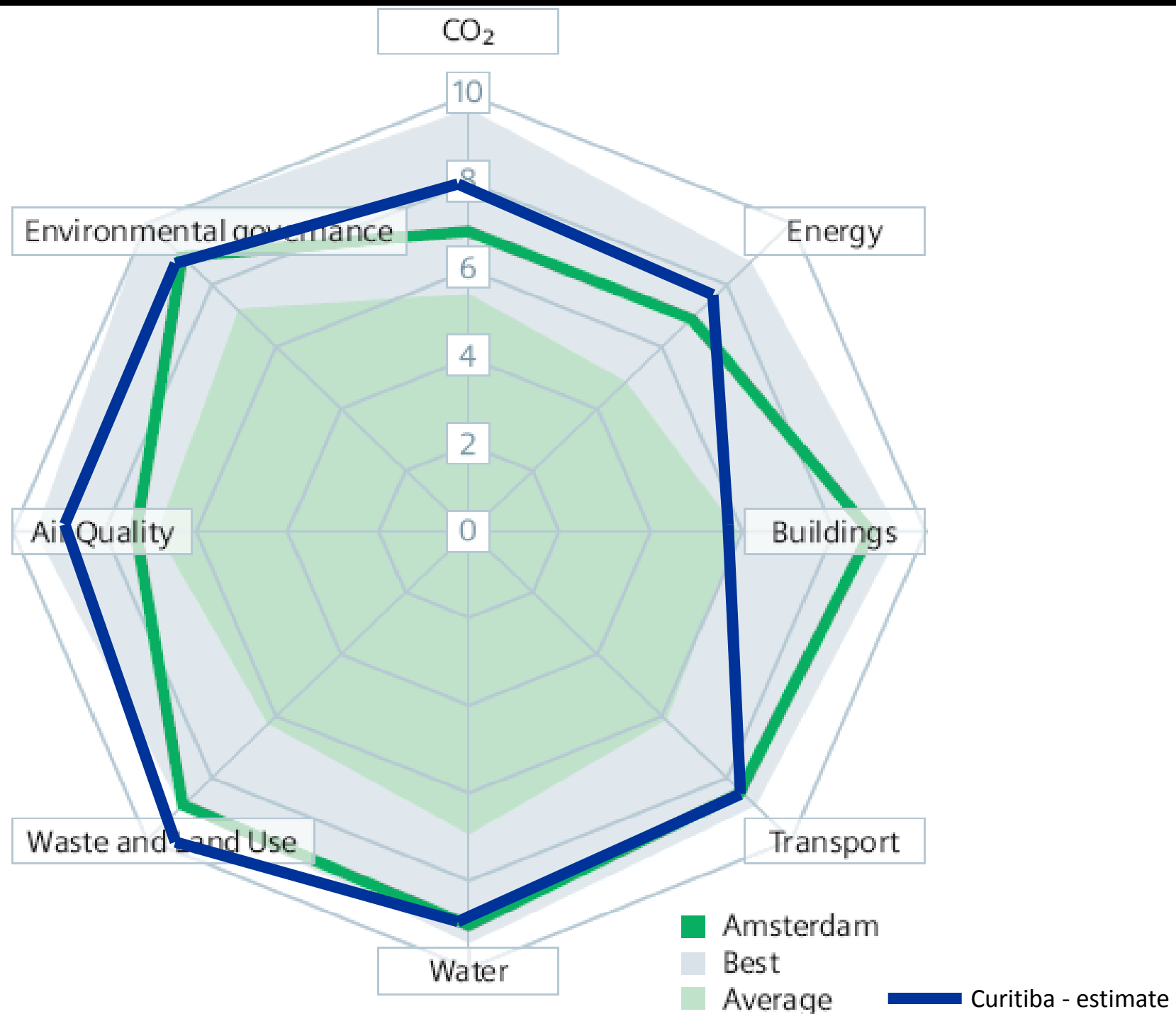
- Copenhagen
- Best
- Average
- Curitiba - estimate



29/08/2018

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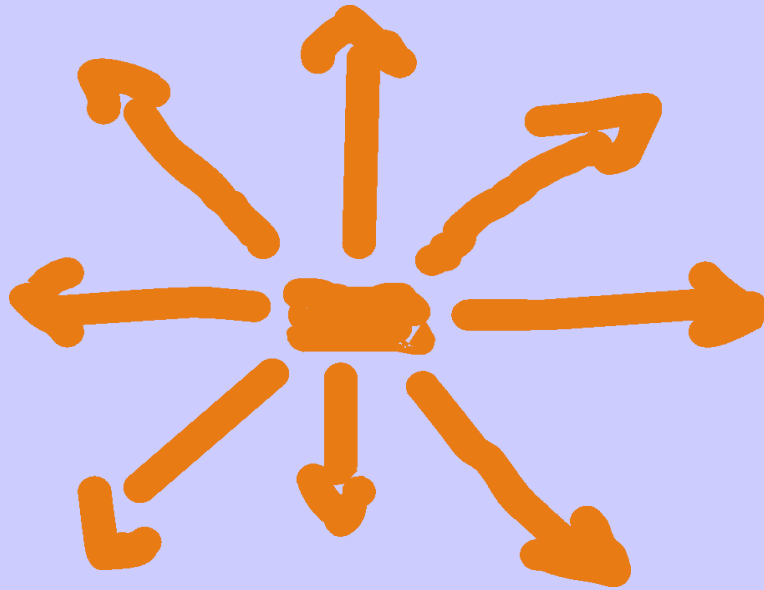
1

Having the Adequate Means and Resources

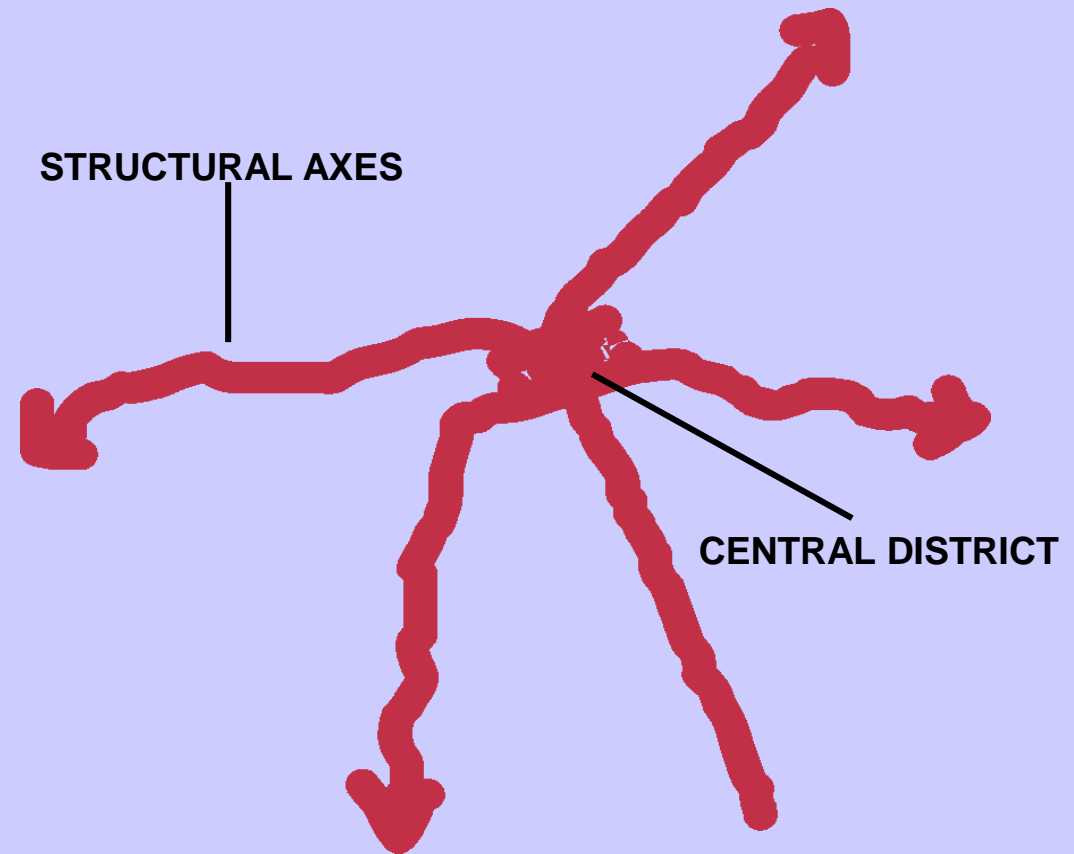
2

**Having a PLAN, the adequate
STRATEGY and the right
INSTITUTIONS to implement
it.**

THE 1965 MASTER PLAN



DISORGANIZED GROWTH

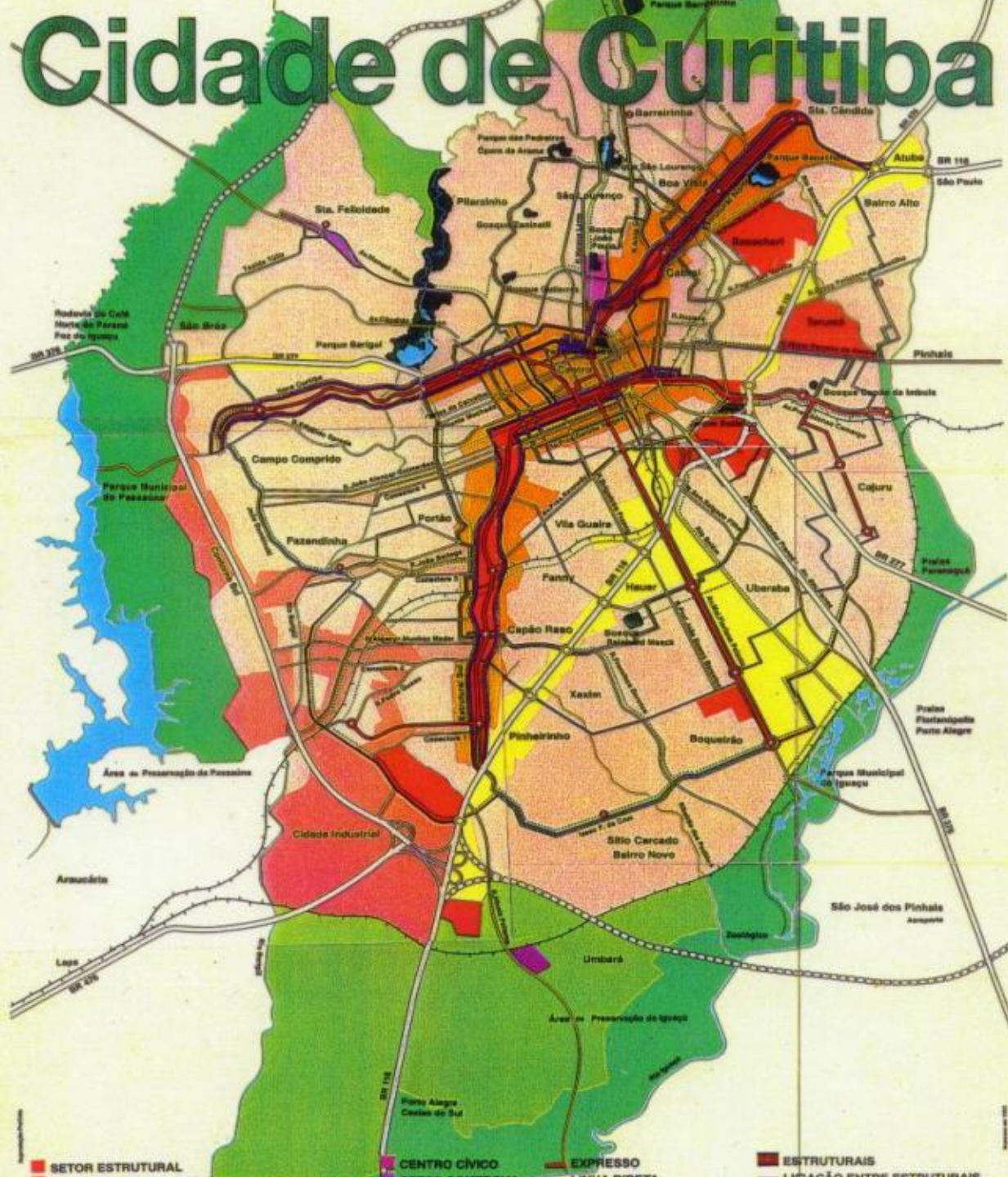


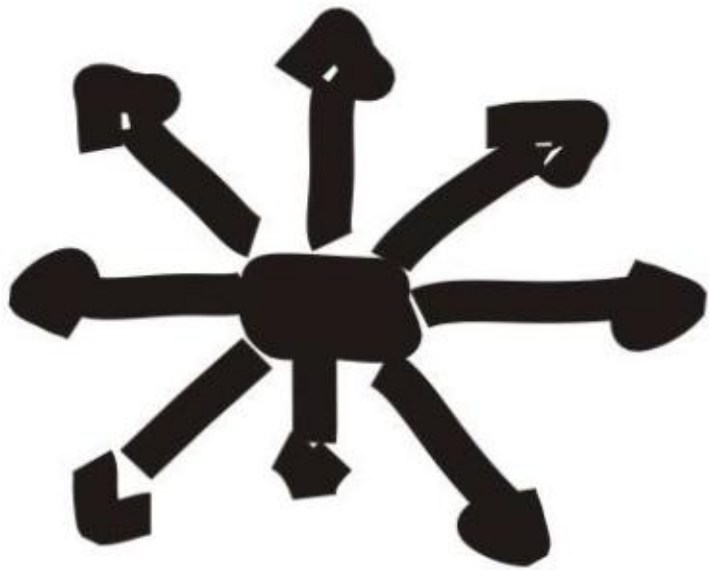
ORGANIZED GROWTH

Cidade de Curitiba

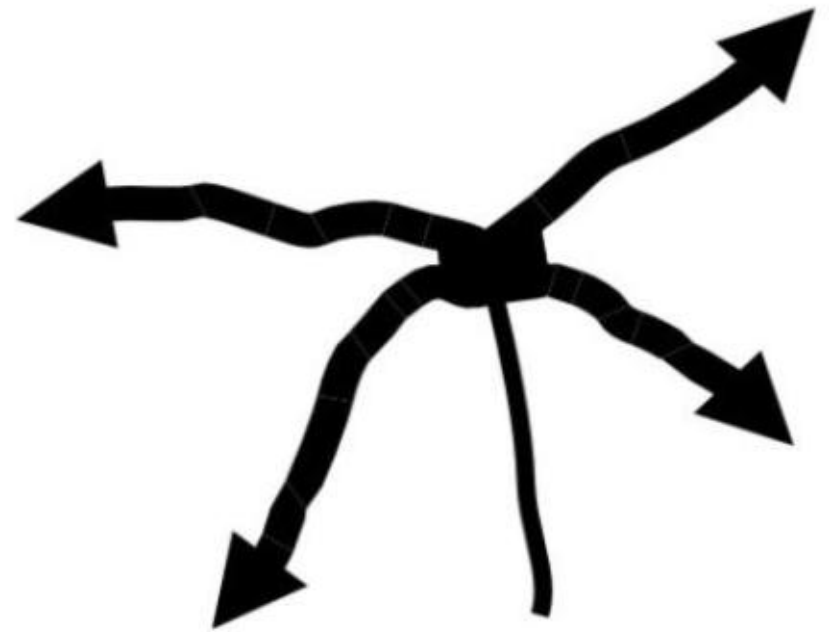
URBAN STRUCTURE OF CURITIBA







Radial Structure of Growth, 1942, Agache Plan



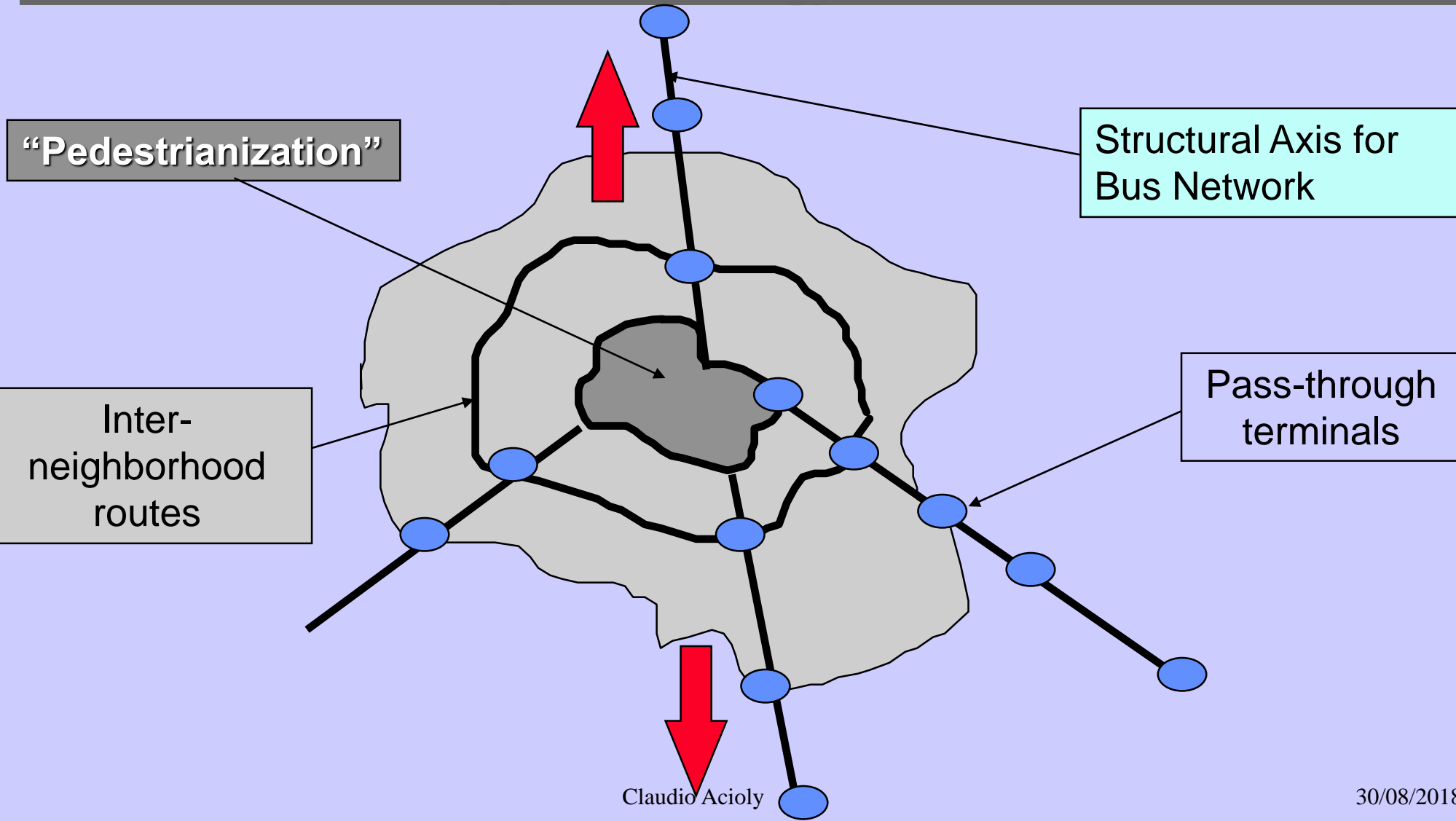
Linear Structure of Growth, 1966 Master Plan

3

Having the Most Appropriate Policies and Land Management Instruments

Changing the Urban Form of Curitiba, Brazil

From Radial to Linear Growth Pattern Urban Development Strategy - SCHEMATIC VIEW





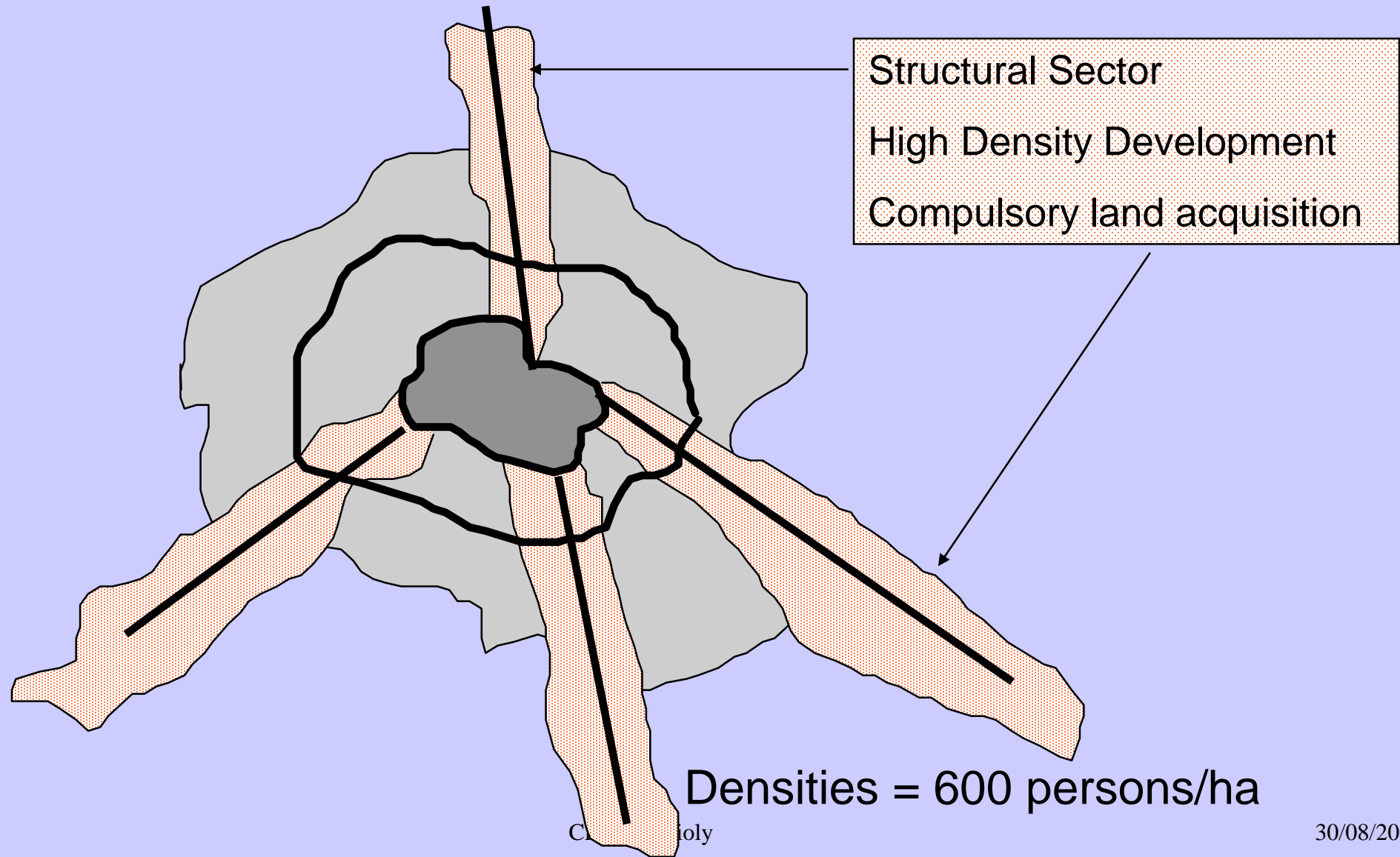
1. INNER CITY REVITALIZATION

- a. Car-free and pro-pedestrian public space creation
- b. Preservation and re-utilization of architectural heritage
- c. More activities in city center: 24 hour street
- d. Better connectivity with the rest of the city



Changing the Urban Form of Curitiba, Brazil

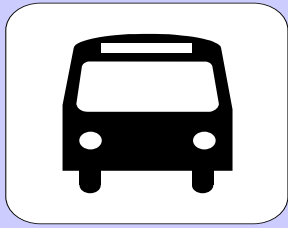
From Radial to Linear Growth Pattern Urban Development Strategy - SCHEMATIC VIEW





STRUCTURAL CORRIDORS





Curitiba Integrated Transport Network

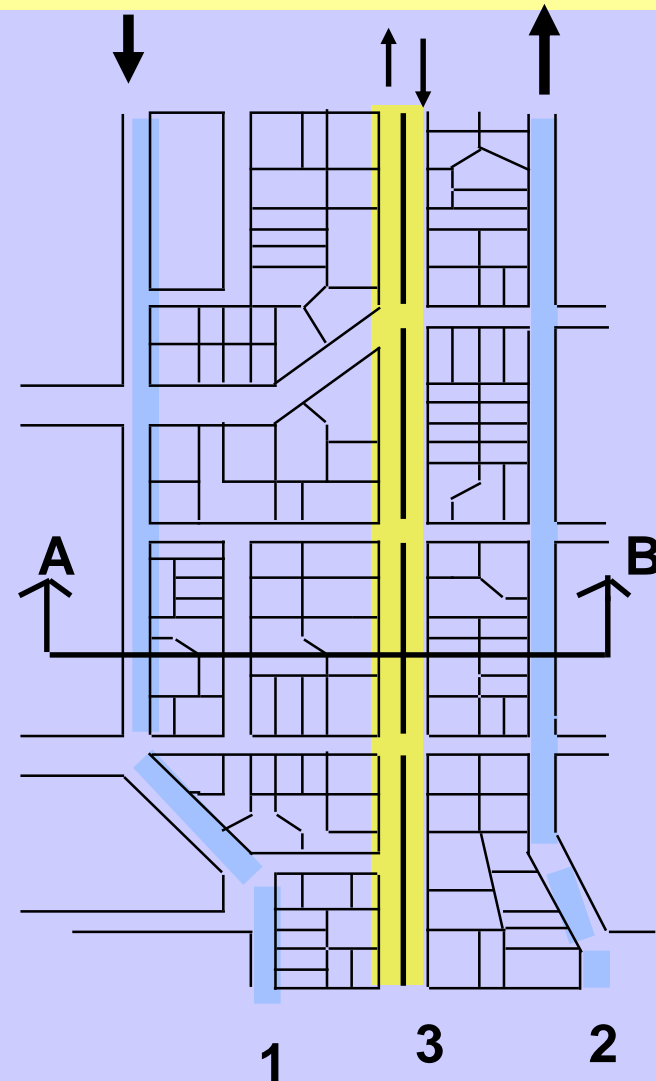
Trinary System and the Structural Axis of Curitiba

1. **One way traffic** towards the inner city.
2. **One way traffic** outwards the inner city.
3. **Structural axis** with exclusive bus lane and parallel local traffic roads.

A-B. Structural sector

Density = 600 inhab/ha

FAR = 6



Source: Acioly & Davidson, 1996; 1998.

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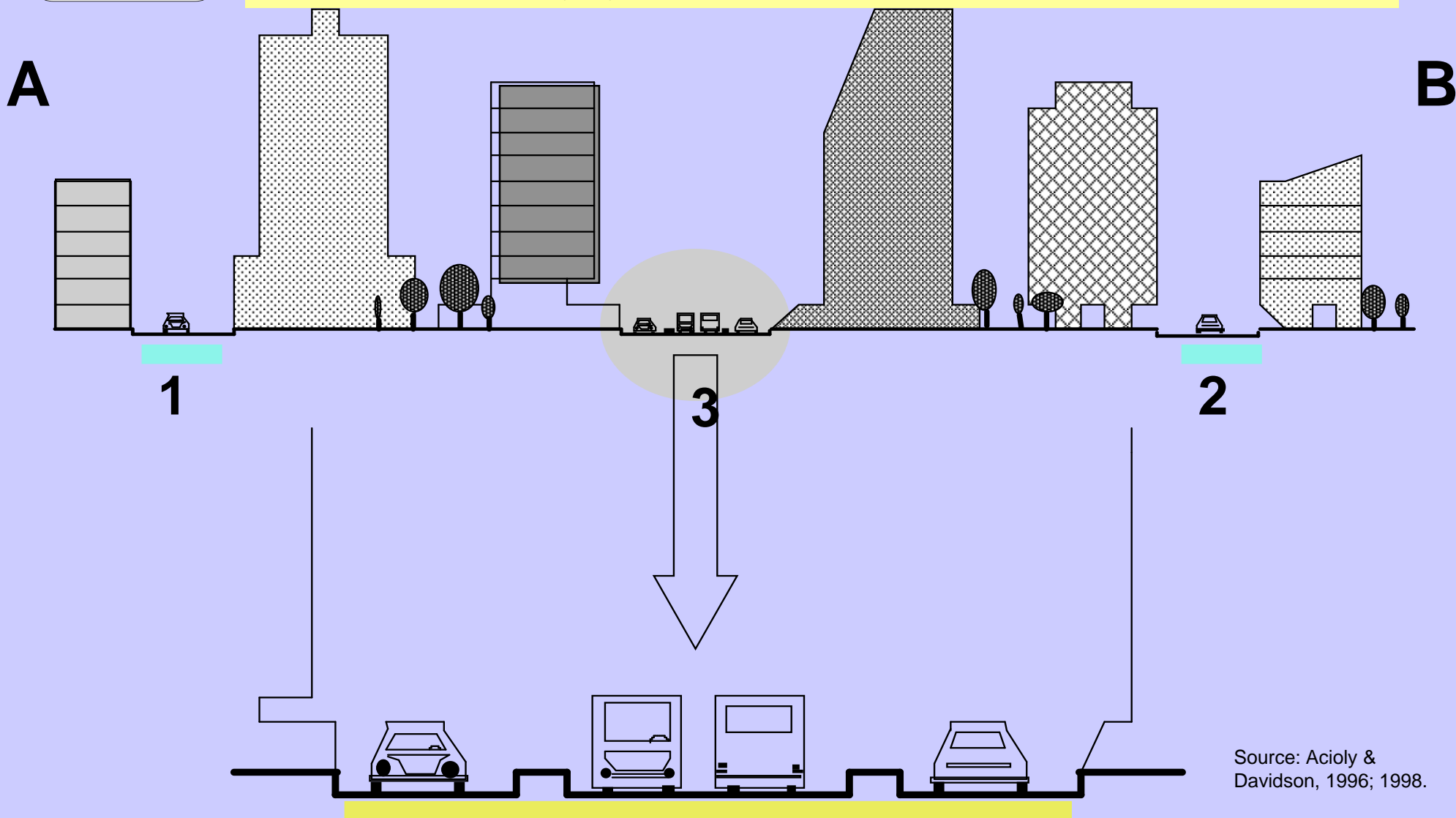
2. PUBLIC TRANSPORT CORRIDORS

- a. Compulsory land acquisition for future growth
- b. 'Structural corridors' for mass bus rapid transit system
- c. Urban planning guidelines: FAR=6 along the corridors



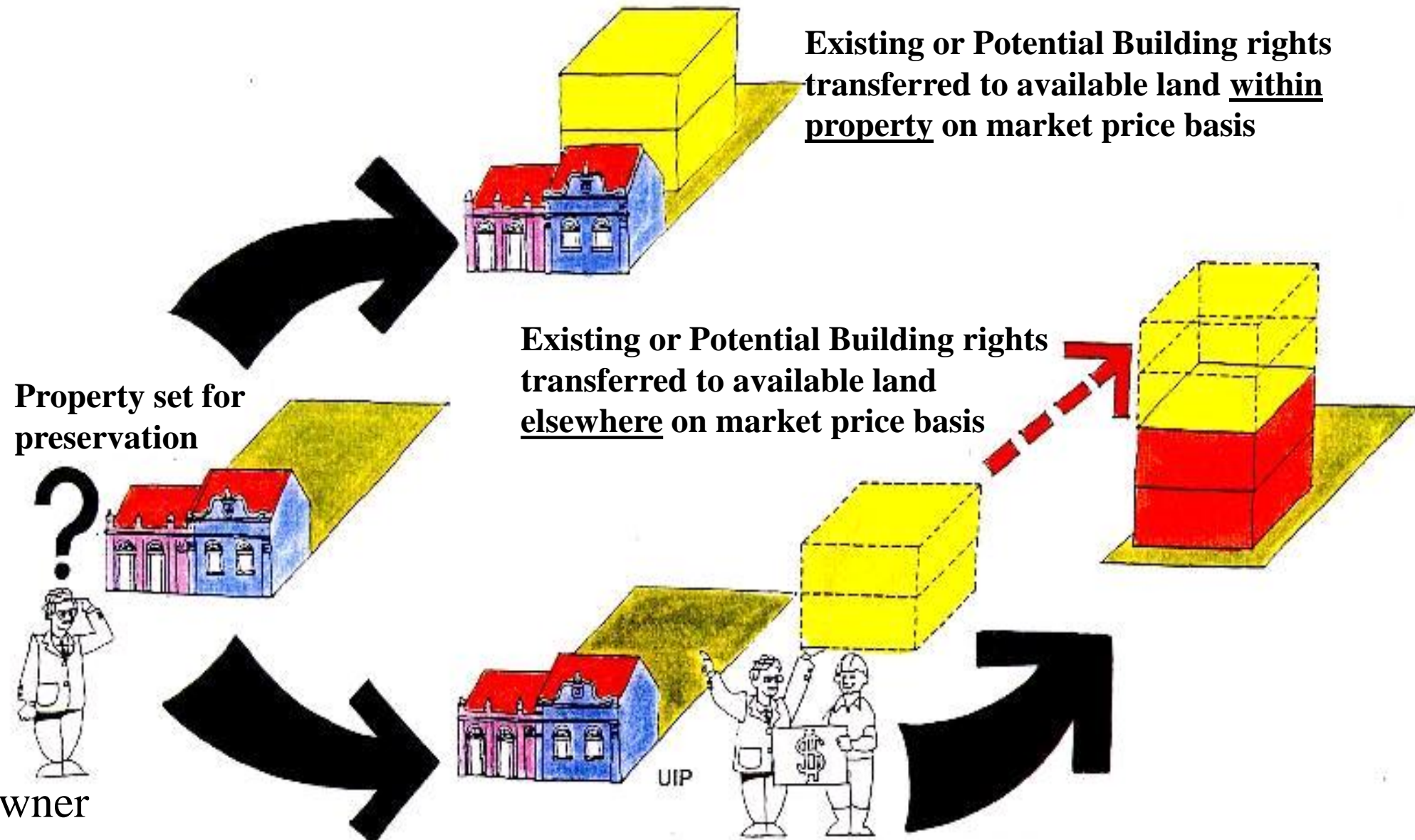
Curitiba Integrated Transport Network

Trinary System and the Structural Axis of Curitiba



Source: Acioly & Davidson, 1996; 1998.

Transfer of Development Rights (building rights)



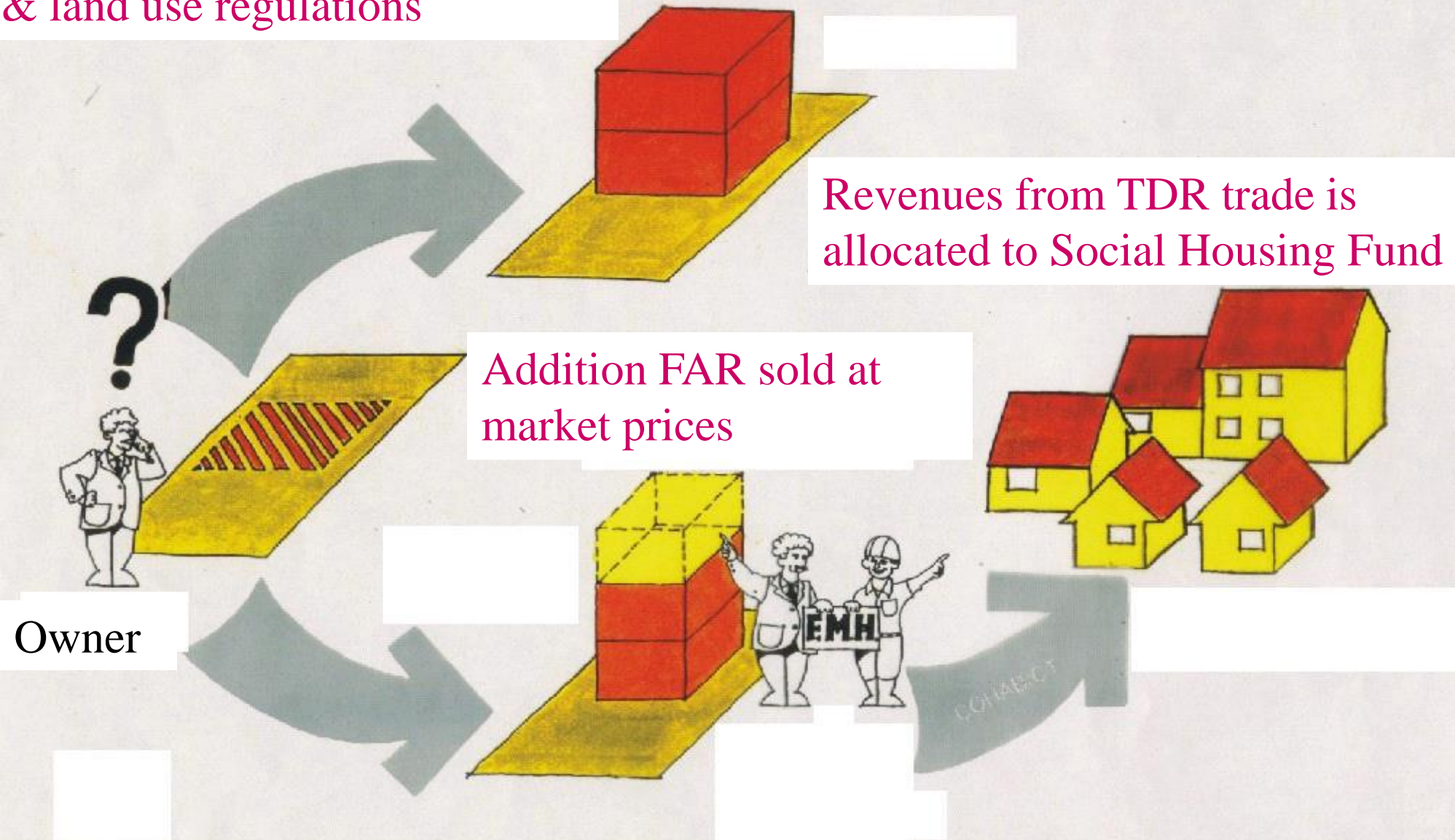
Land-use Plan Freezes FAR (Architectural & Heritage Preservation)





Transfer & Sell of Development Rights (building rights)

Land use zone determines FAR
& land use regulations

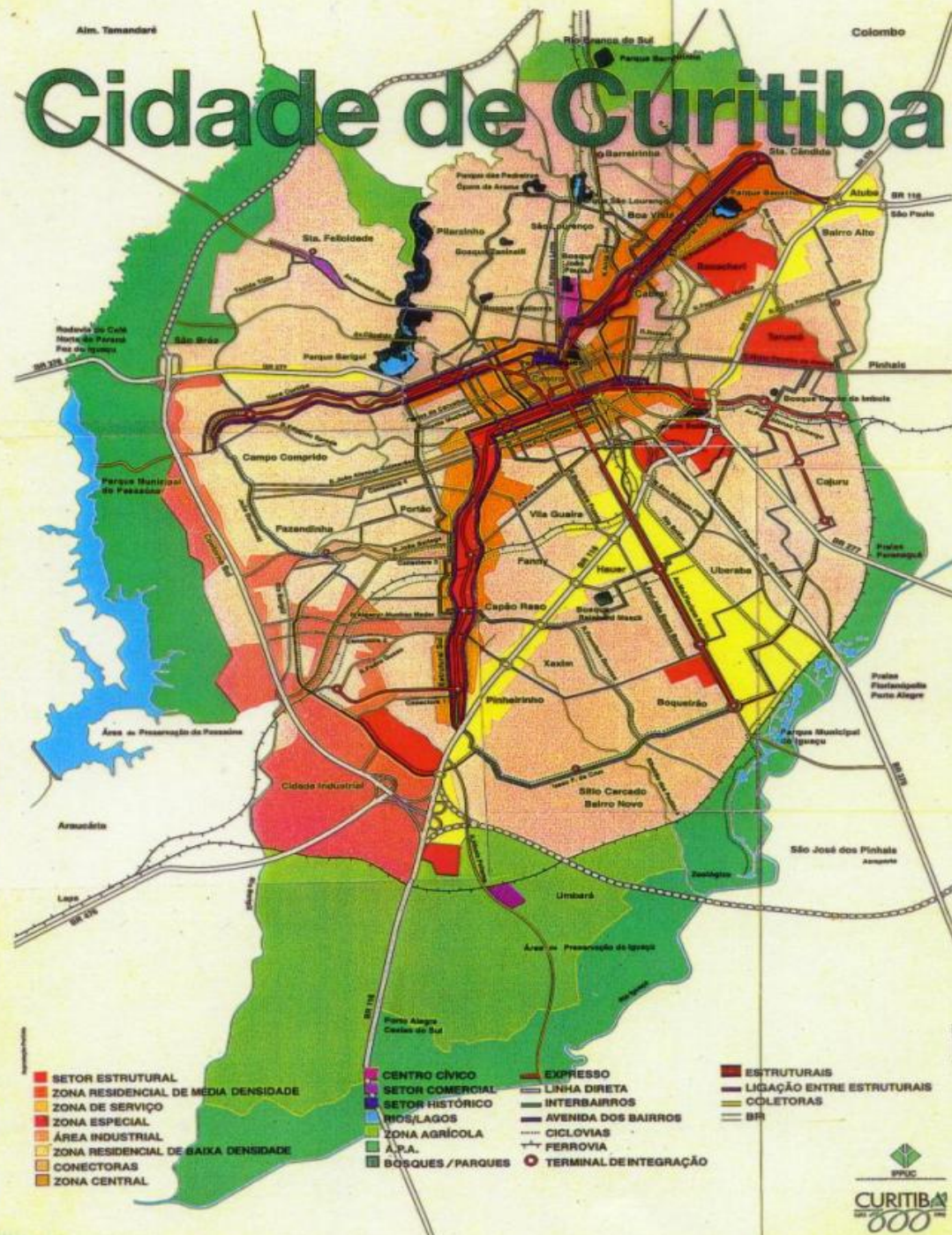


LOW INCOME HOUSING / VILLAGE OF ALL TRADES



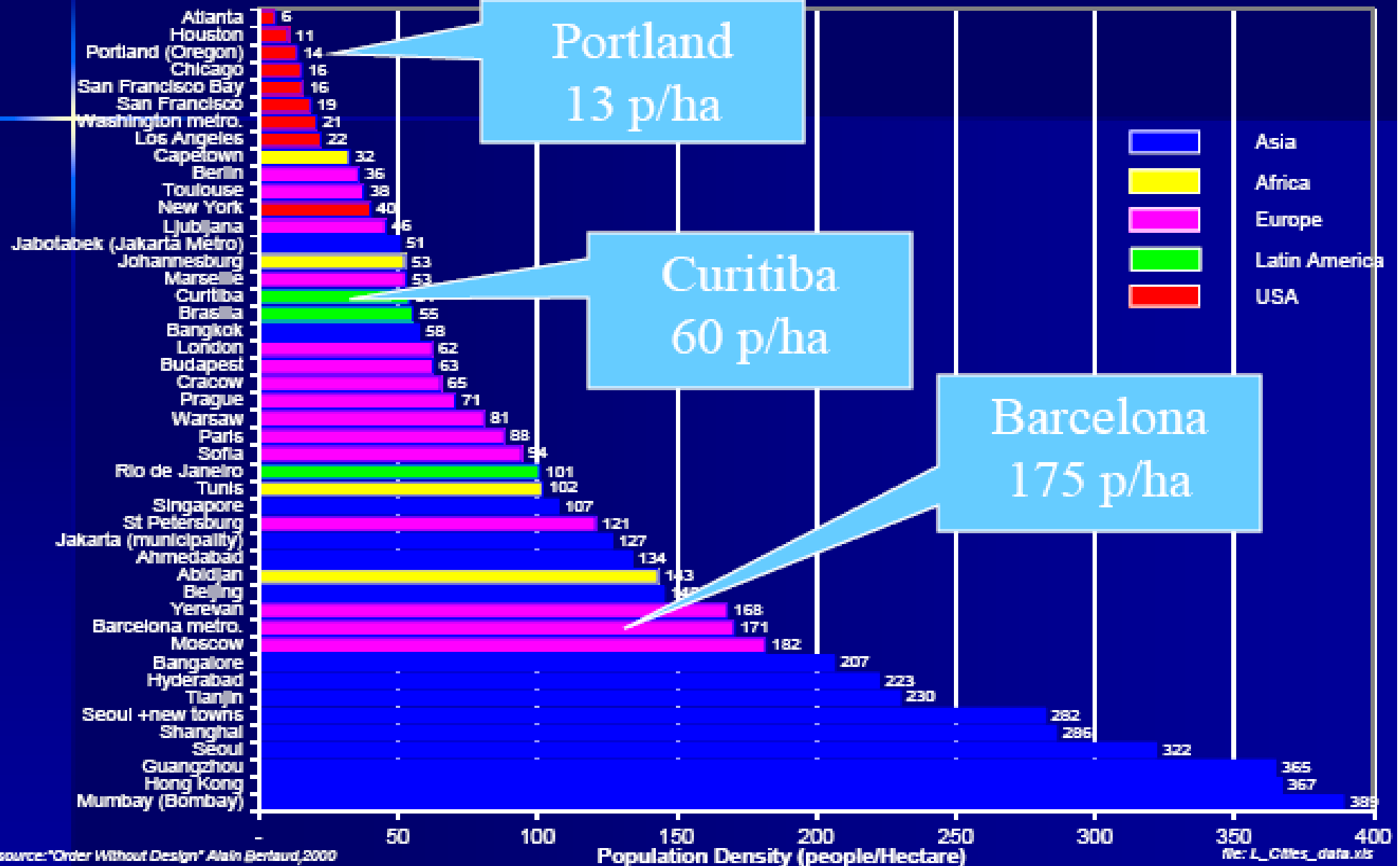
3. Urban Planning Strategy

- a. Urban Density: densification and optimal use of land & infrastructure
- b. Land Use: mixed use and increasing FAR along public transport corridors
- c. Increase FAR: selling air rights/development rights for generating revenues
- d. Public space: more space for pedestrians and public transport



Comparative Population Densities

Comparative population densities in metropolitan areas identified by region



4

**Having an integrative view of
urban development.**

Housing - Land Use - Transportation

LAND USE

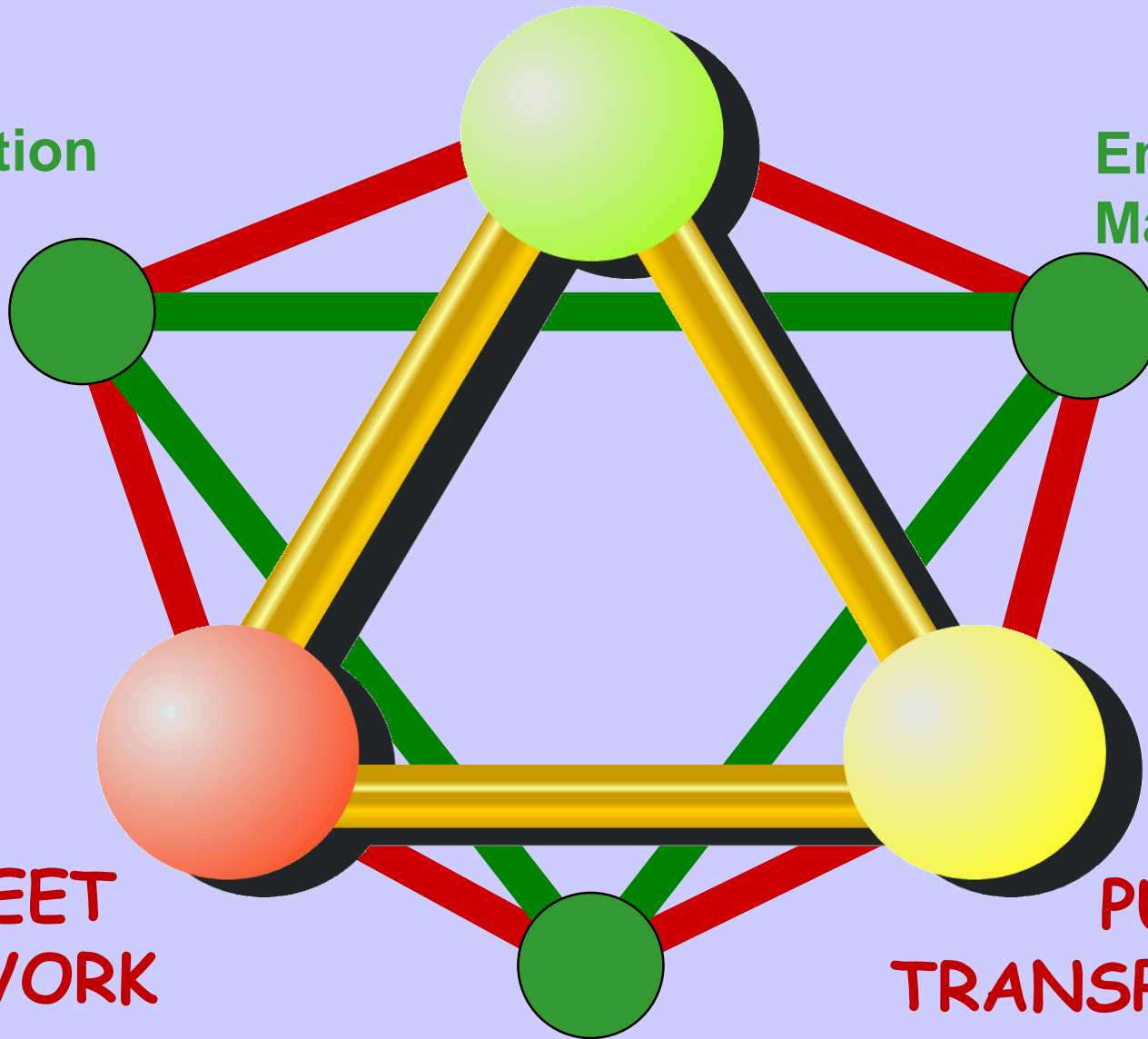
**DATA
Information
System**

**Environmental
Management**

**STREET
NETWORK**

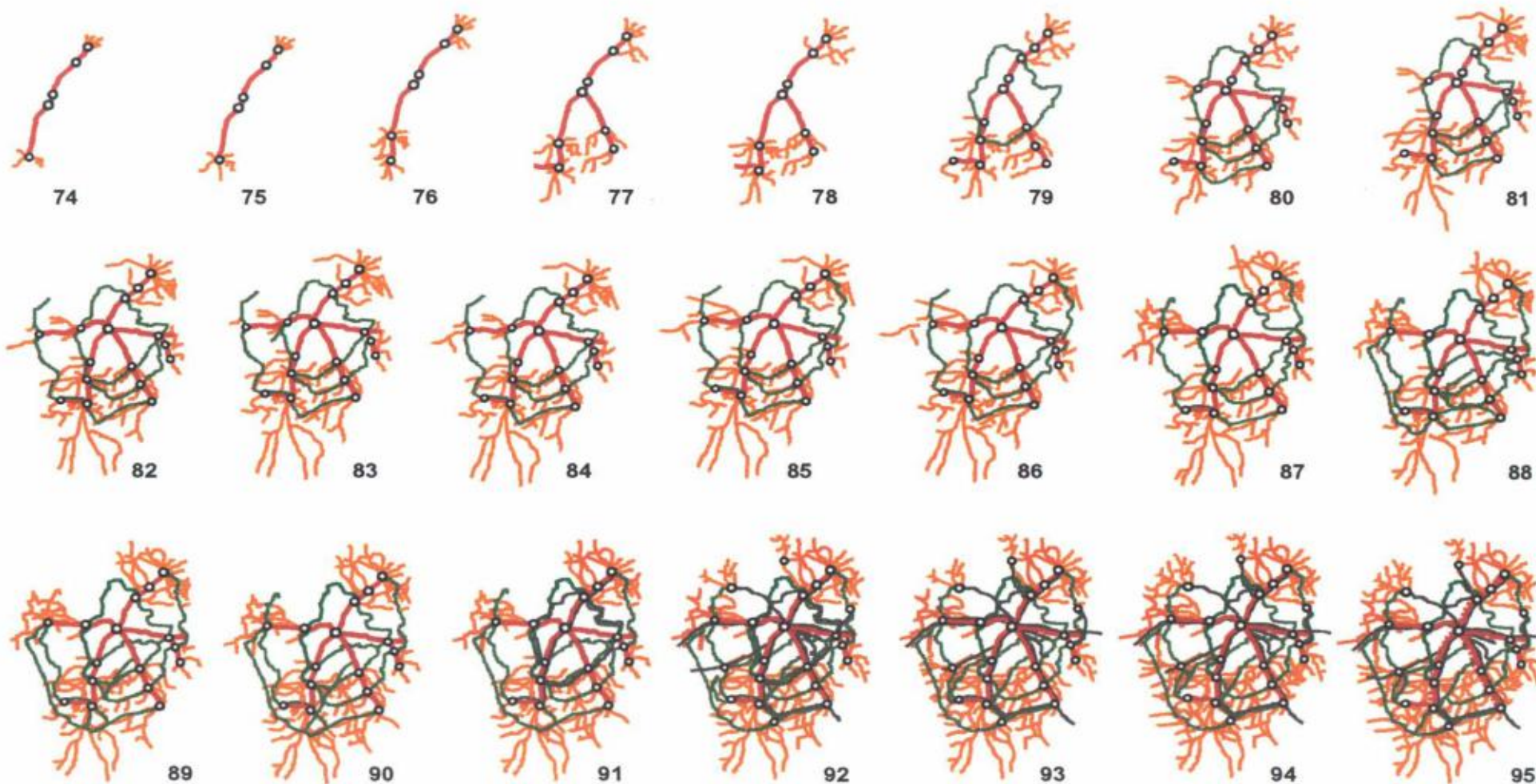
**PUBLIC
TRANSPORTATION**

Public Private Partnerships





EVOLUÇÃO DA REDE INTEGRADA DE TRANSPORTE - RIT - 1974/1995



Ligeirinhos



Alimentadores



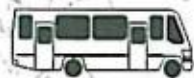
Interbairros



Expressos



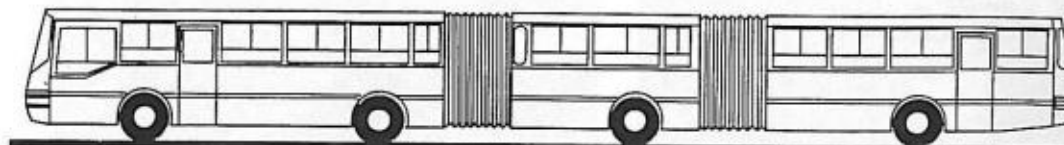
Biarticulados



tipo de linha	no de linhas	frota oper.	pass./dia útil	passag pag/du
Circular Centro	2	7	4.251	4.251
Convencional	84	302	278.387	278.382
Alimentador	115	358	396.456	214.312
Interbairros Padron		102	173.169	89.494
Interbairros Articulado	7	25	15.000	7.751
Linha Direta	12	180	252.375	85.842
Expresso Padron		93	120.548	80.889
Expresso Articulado	11	43	97.515	60.665
Expresso Biarticulado	4	95	322.537	195.477
TOTAIS	235	1.205	1.660.238	1.017.063



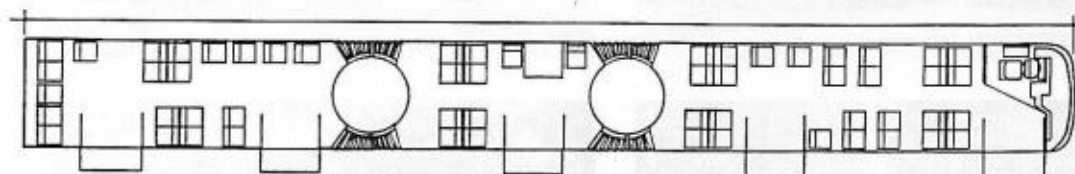
**The Biarticulated
bus line, a new
project**



Elev. Lateral Esquerda



Elev. Lateral Direita



Planta



Elev.Frontal

Comprimento	24.520 m
Largura	2.500 m
Altura	3.415 m
Cor	vermelho



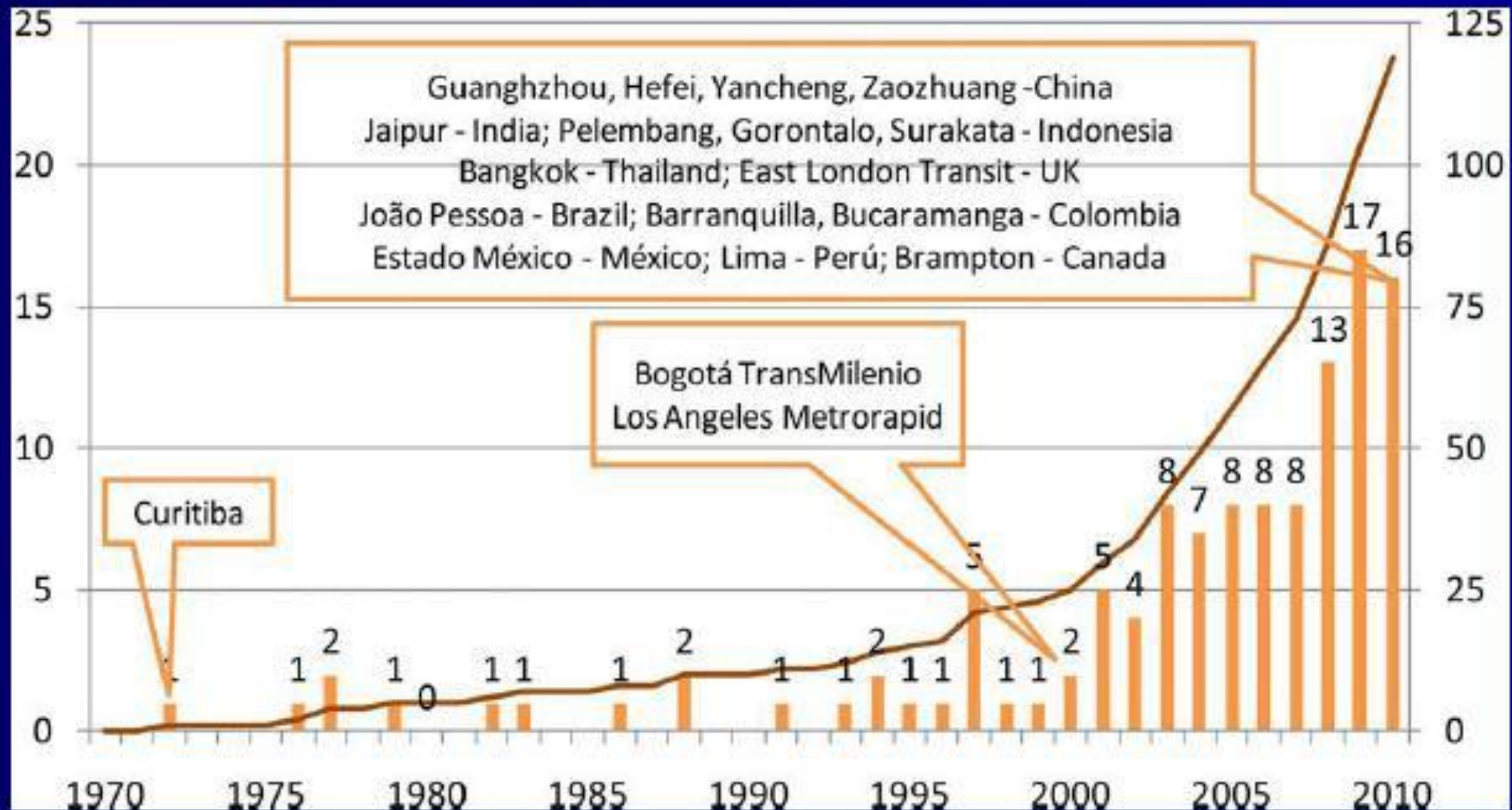




Spread of BRT

Source: EMBARQ. (2011). BRT/Bus Corridors Database.

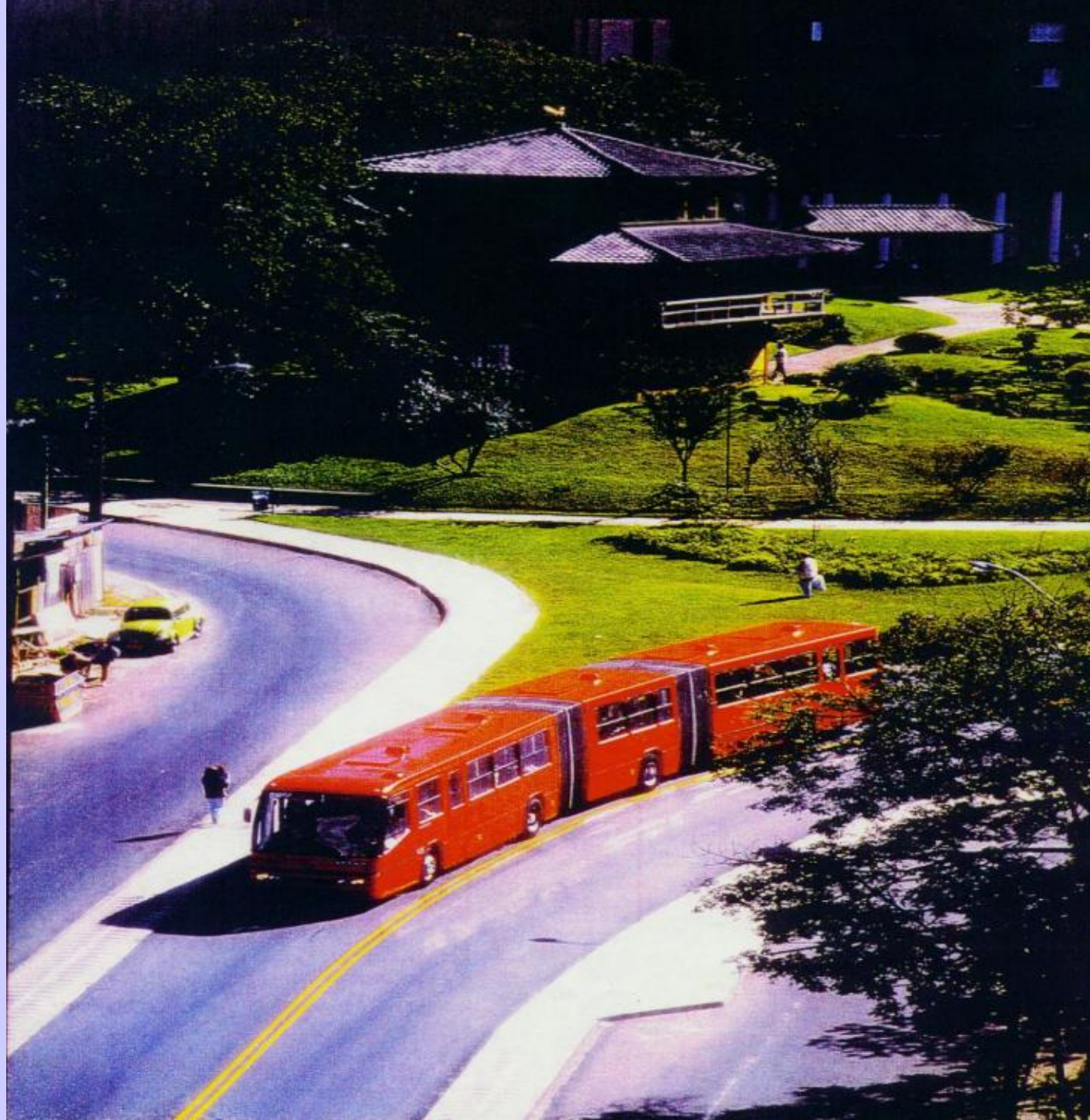
<http://www.embarq.org/en/theglobal-bus-rapid-transit-brt-industry>.



5

**Involving key stakeholders in
the implementation of the
vision.**















Entrada
Sentido > Capão Raso

Saída

Estação
Central

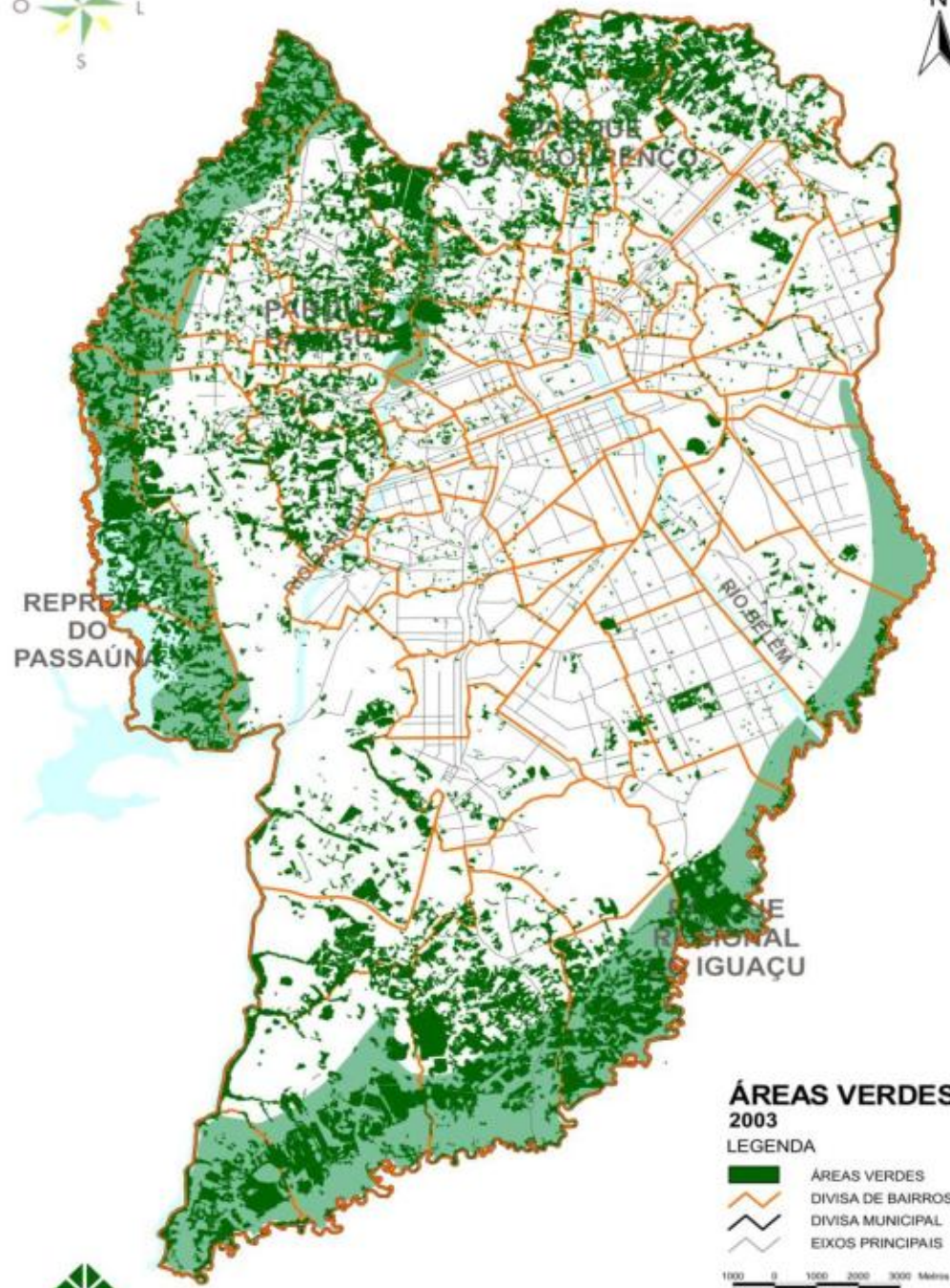
CURITIBA

958

8

Urban Environmental Management Vision:

Become a sustainable city



IPPUC INSTITUTO DE PESQUISA E PLANEJAMENTO URBANO DE CURITIBA

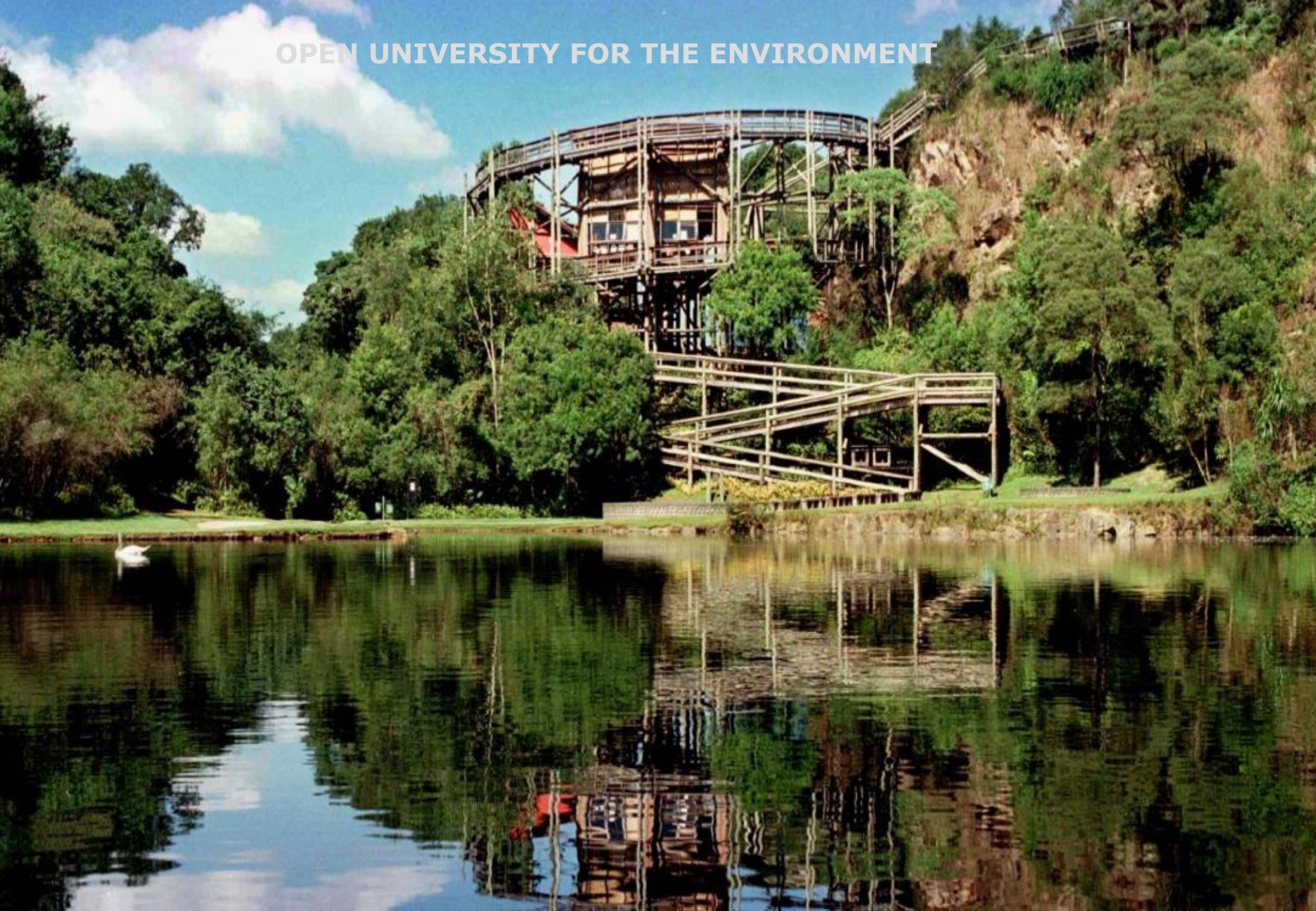
ENVIRONMENT

Systems of Environmental Conservation

51,50m² of green area per inhabitant



OPEN UNIVERSITY FOR THE ENVIRONMENT



BARIGUI PARK



"LIXO QUE NÃO É LIXO"

CÂMBIO VERDE

O LIXO QUE NÃO É
CÂMBIO
VERDE





"LIXO QUE NÃO É LIXO"
CÂMBIO VERDE

















THE END