Vegetation Management in São Paulo, Brazil

Clearing of urban vegetation and environmental compensation

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4 10

- Density and type of leaves
- Size of the tree crown
- Tree location within the city


EFFECTS ON MICROCLIMATE ARE LOCAL

PLANTING

IRRIGATION

PRUNING

STORM DAMAGES

WINTER THERMAL

DISCOMFORT

SAFETY

1.530 Km²

11 MILLION PEOPLE

METROPOLITAN AREA 38 CITIES
20 MILLION PEOPLE


RAINFOREST


NATURAL OPEN FIELDS


WEATLANDS

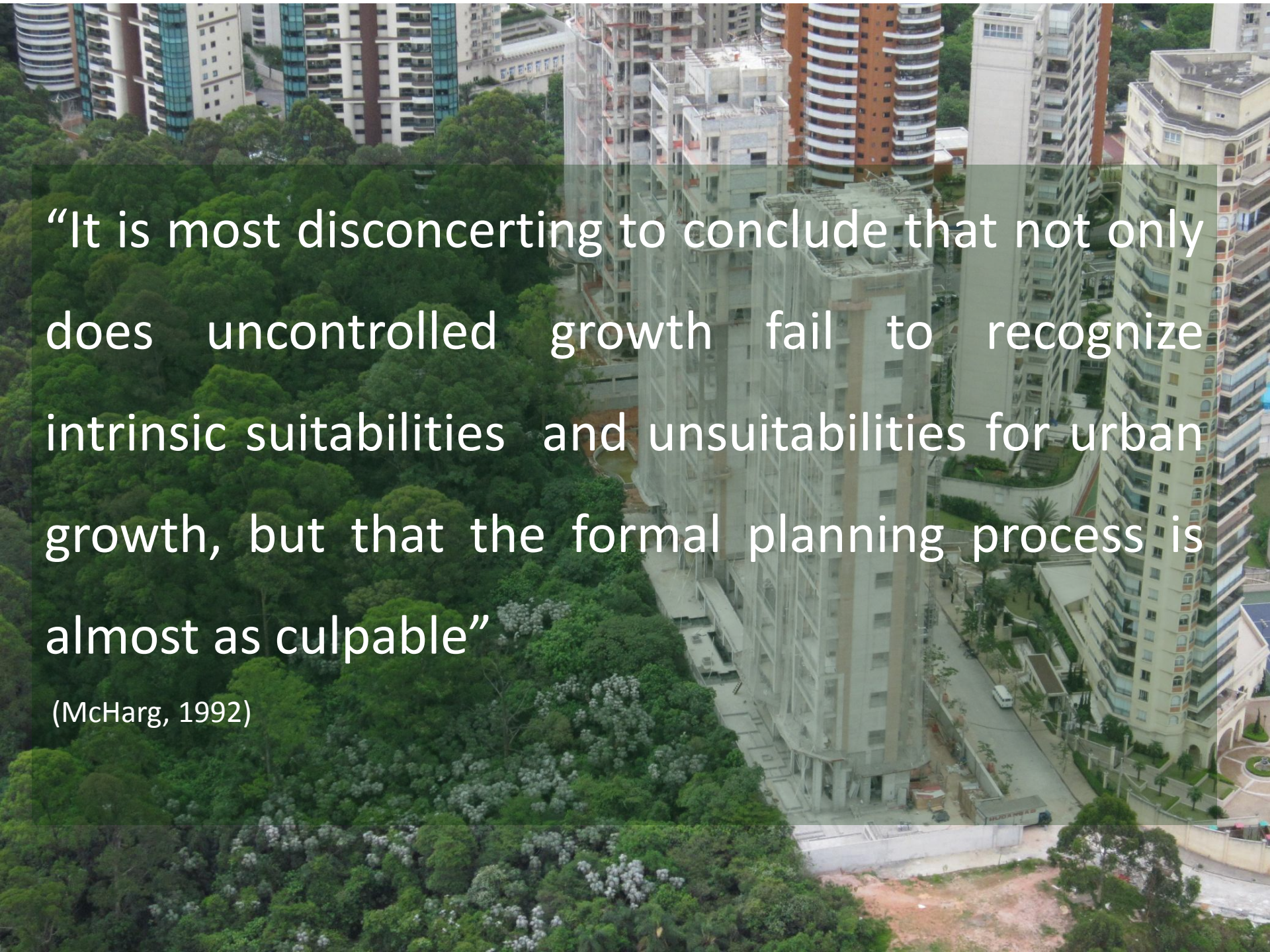

1554

Image from: Nelson Coelho


2010


2010

Image from Jorge Ferreira



"It is most disconcerting to conclude that not only does uncontrolled growth fail to recognize intrinsic suitabilities and unsuitabilities for urban growth, but that the formal planning process is almost as culpable"

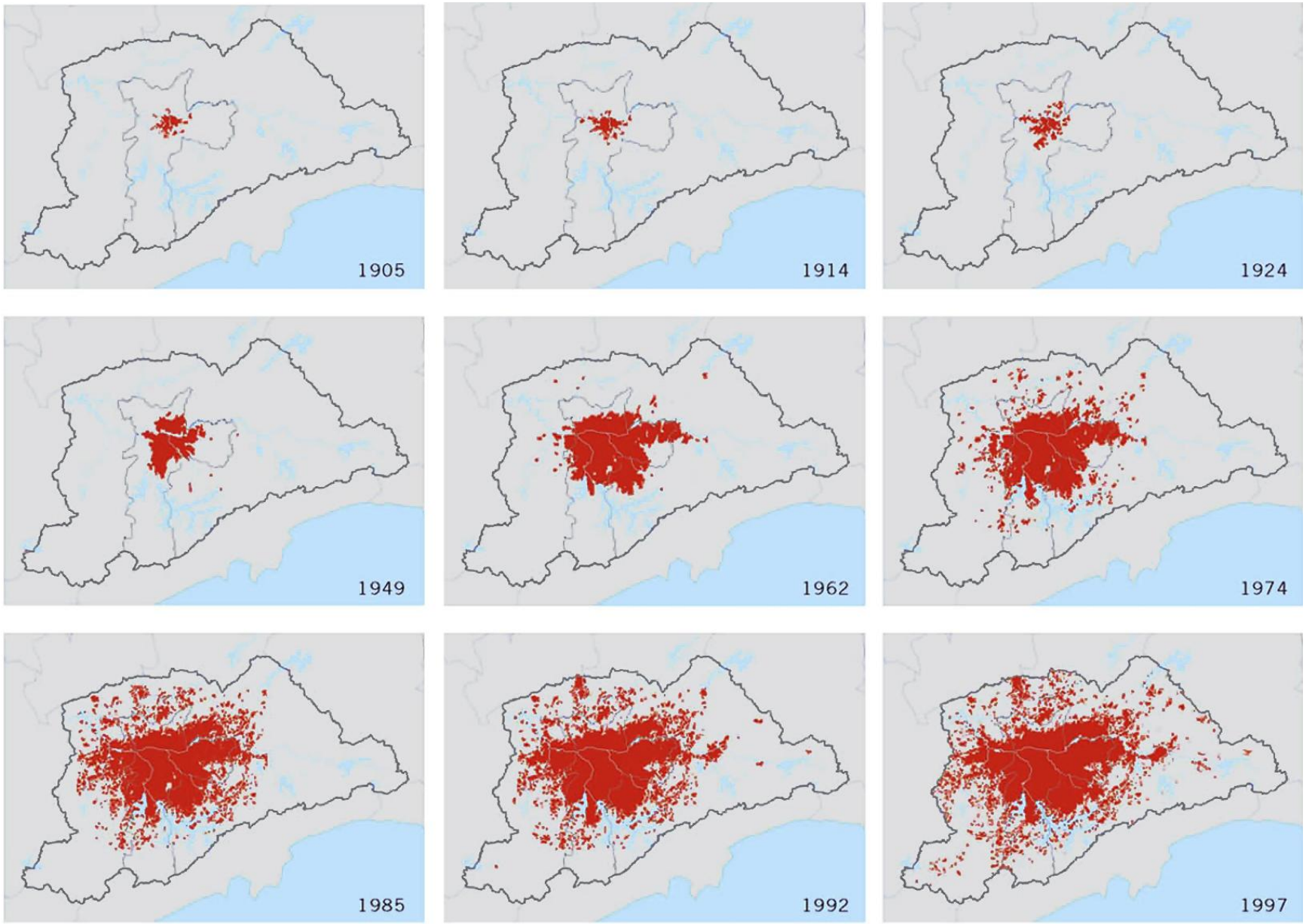
(McHarg, 1992)


31% of existing vegetation

Natural barriers


Natural barriers ?


Natural?



Simplification + Sizeable reduction of the urban forest

48 laws

To protect vegetation and regulate its management

Through a complex offset process

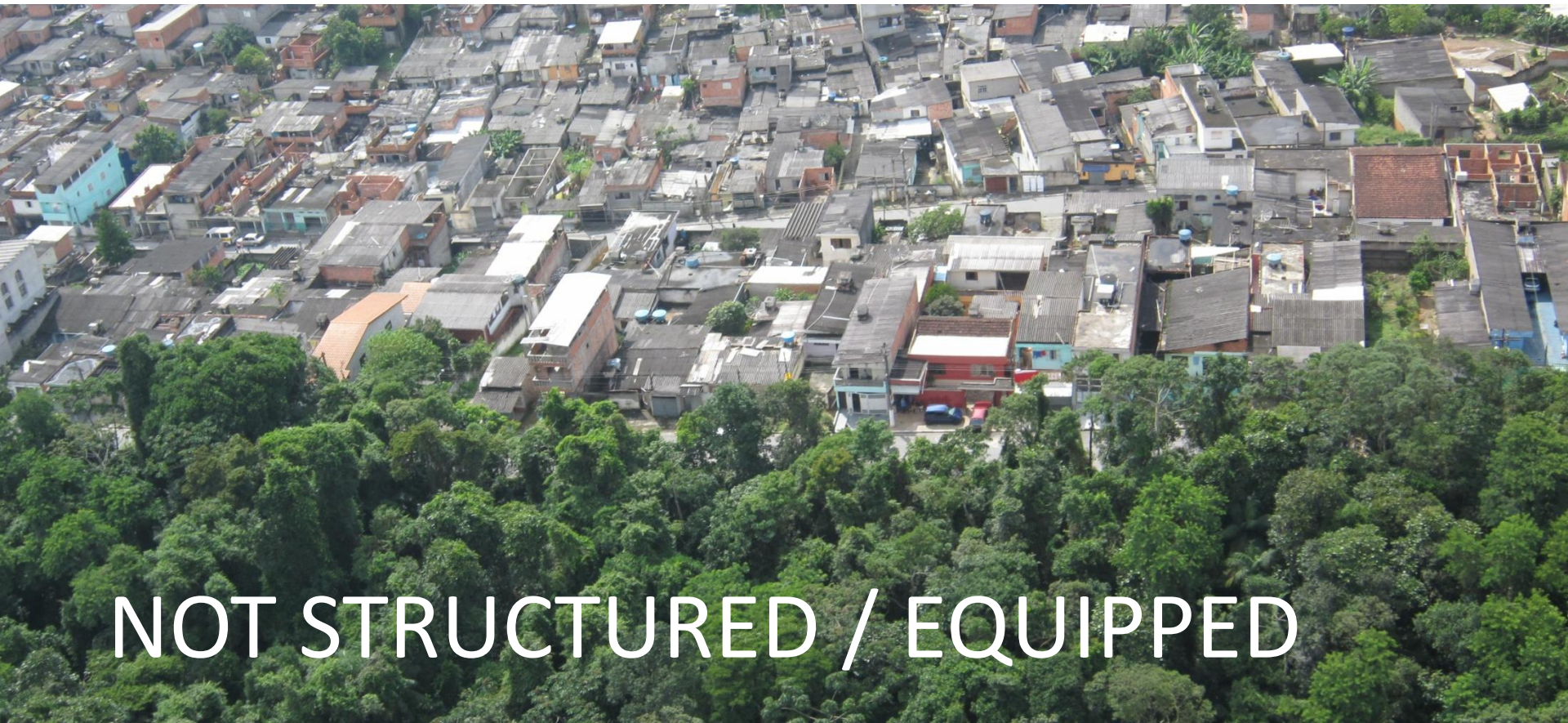
All tree suppression must be compensated

48 laws

MOST DEFORESTATION IS ILLEGAL

48 laws

INTENSE PUBLIC & SOCIAL CONTROL



48 laws

OFFICIAL VEGETATION MANAGEMENT

48 laws

Federal

State

Municipal

48 laws

- Procedures for vegetation clearance
- Punishments for unauthorized clearance
- Benefits for preservation
- Compensation
  - Planting of trees
  - Supplying tree seedlings to the Municipal Tree Nursery
  - Conversion into monetary values EXCEPCIONALLY

5 cm trunk diameter

Calculating compensation

$$CF = (A+B+C+D+E+M) \times FR_1 \times FR_3$$

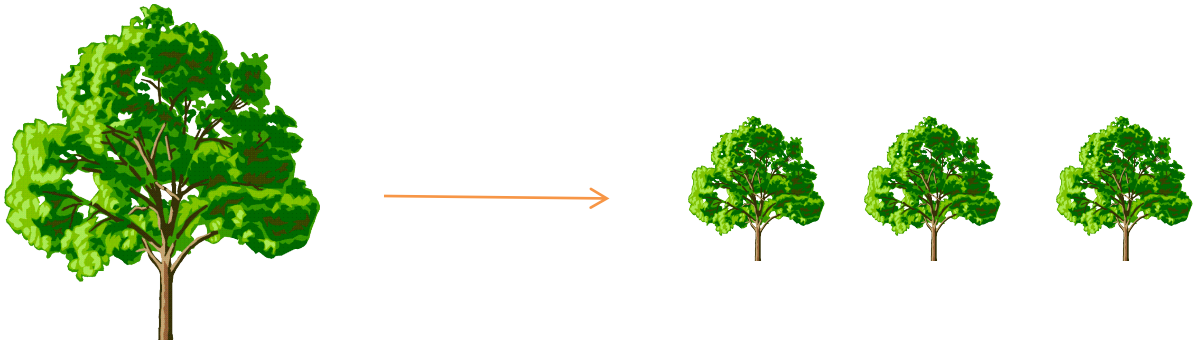
$$A = \{[(Ite \times Te) + (Ice \times Ce)] \times 50\%\} + \{[(Itn \times Tn) + (Icn \times Cn)] \times Fm\}$$

$$C = [(Ite \times Tex) + (Icex \times Cex)] \times Fm$$

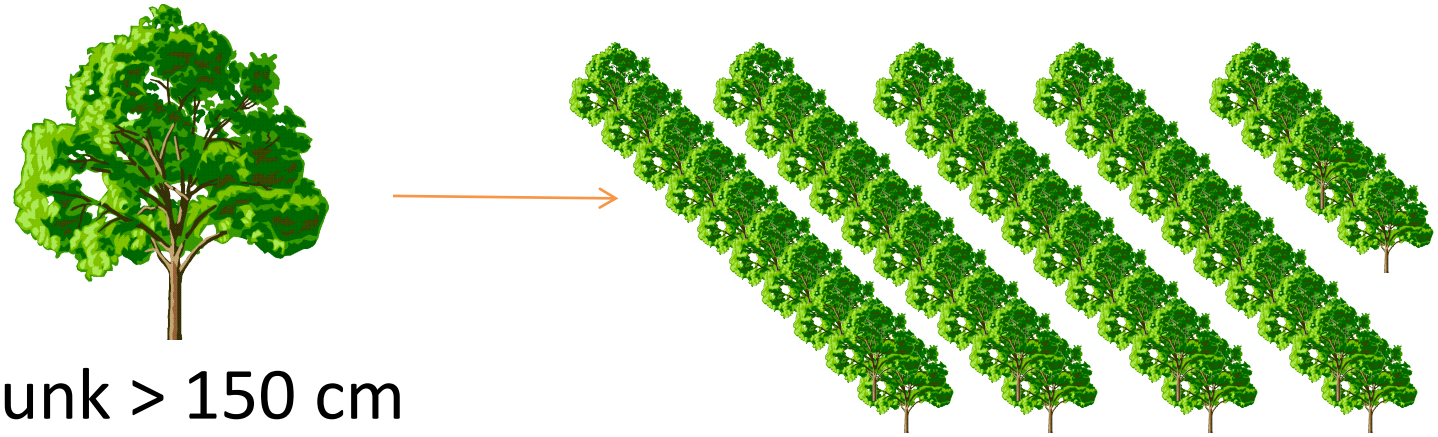
$$VCF = CF \times V$$

Calculating compensation parameters

* Trunk diameter



trunk = 5-10 cm



trunk > 150 cm

Calculating compensation parameters

* Trunk diameter
* Location
    - Preserved areas
    - Heritage areas
    - Other location

Calculating compensation parameters

* Trunk diameter
* Location
* Type of tree
    - Invasive, exotic X1
    - Species protected by law X 10
    - Endangered species X 5

Calculating compensation parameters

* Trunk diameter
* Location
* Type of tree
* Grouping
    - Isolated tree X1
    - Forest fragments < 1000m² X 3
    - Forest fragments > 1000m² X 4

Considerations

* Not possible to identify theoretical foundation of the proportion: suppressed X planted

* Just trees and palm trees. No herbaceous and shrubs

* Wildlife

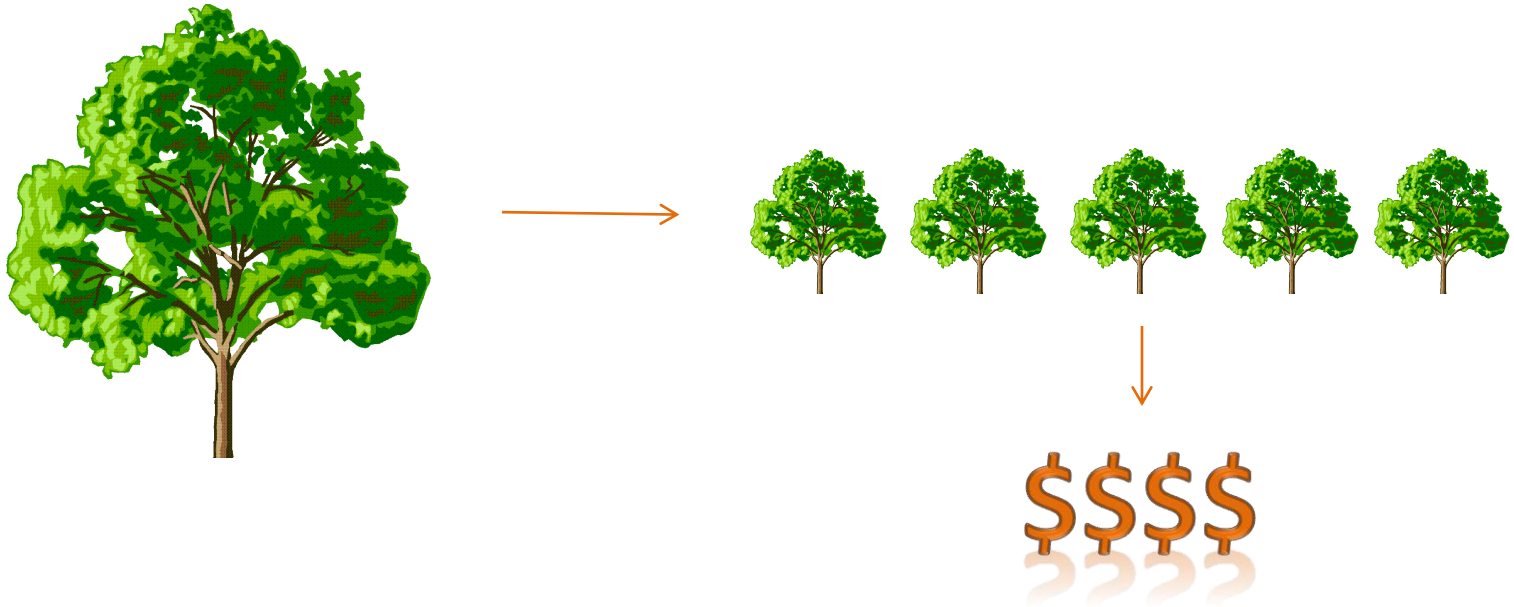
Considerations

* Compensation doesn’t consider the amount of existing vegetation

* No concerns about the form of preserved fragment / planting area

* Despite all formulas, trees protected by law can be removed

Converting into monetary values



NUMBER OF TREES TO BE PLANTED

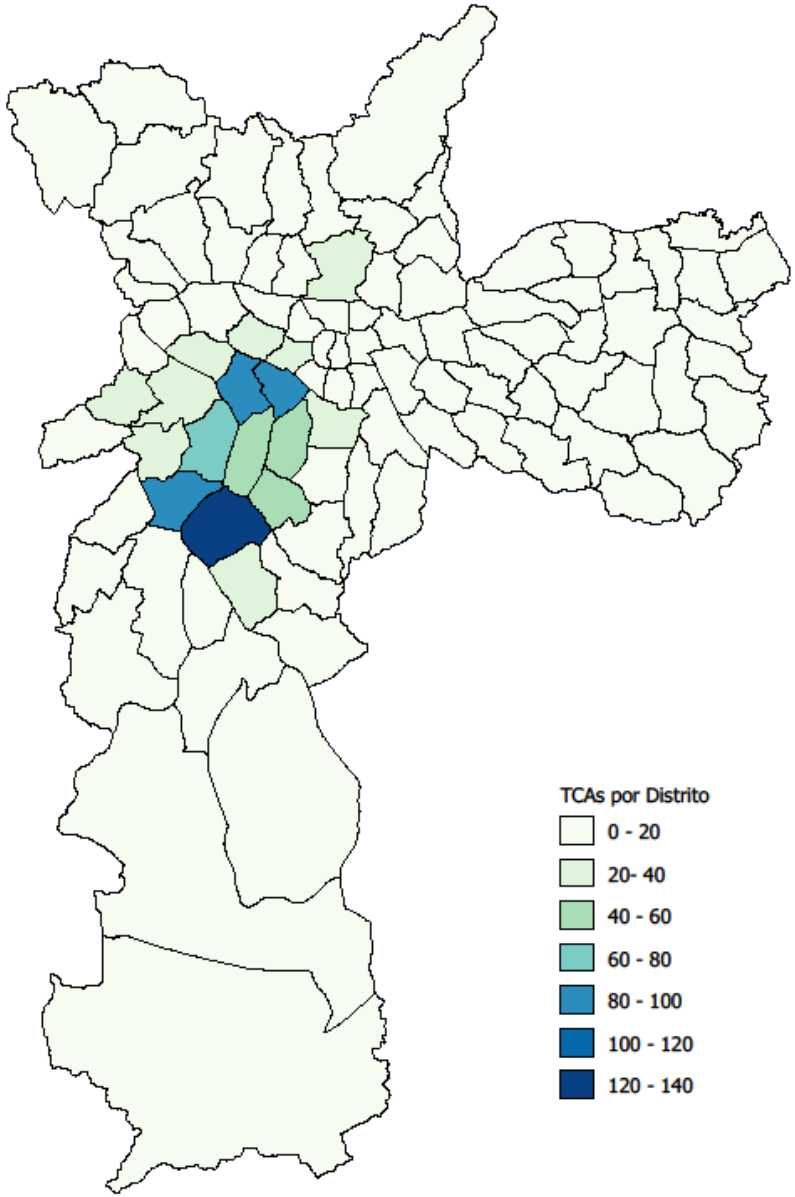
x

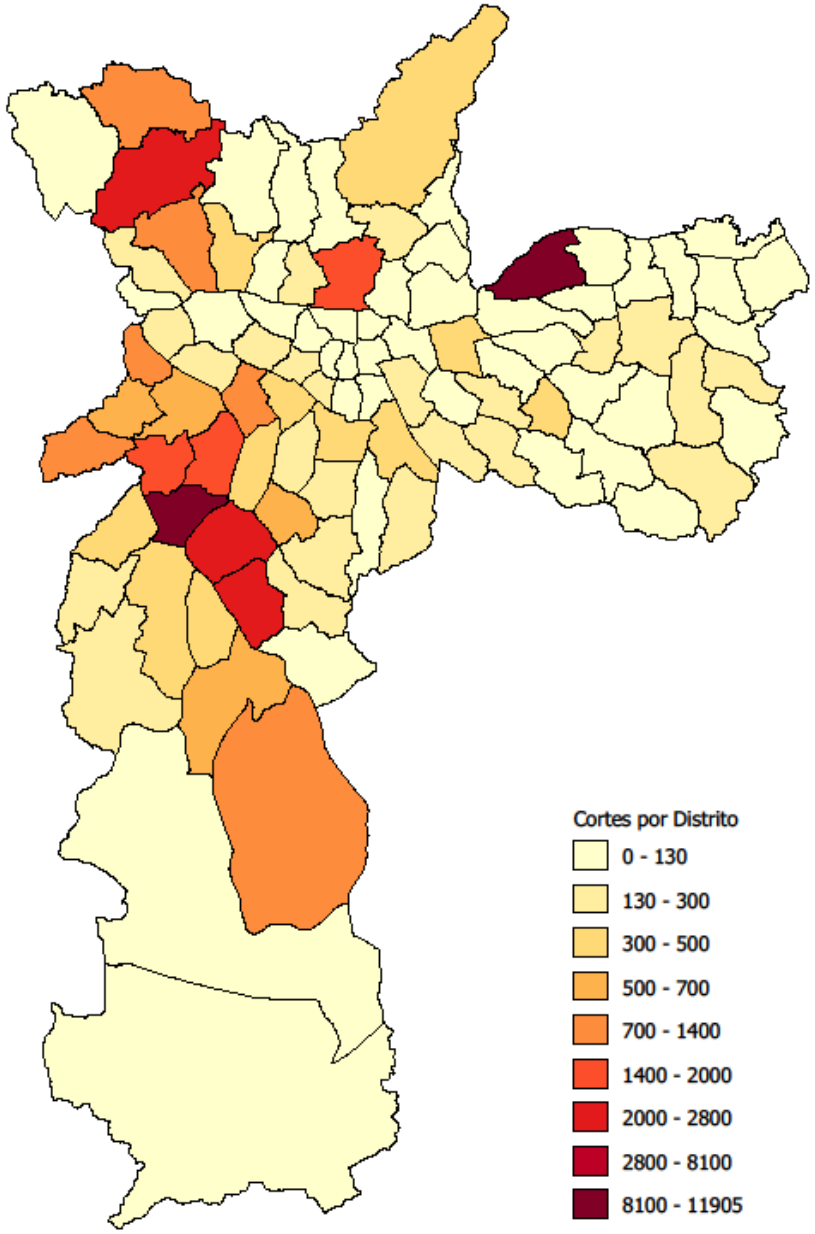
COST TO PLANT A TREE

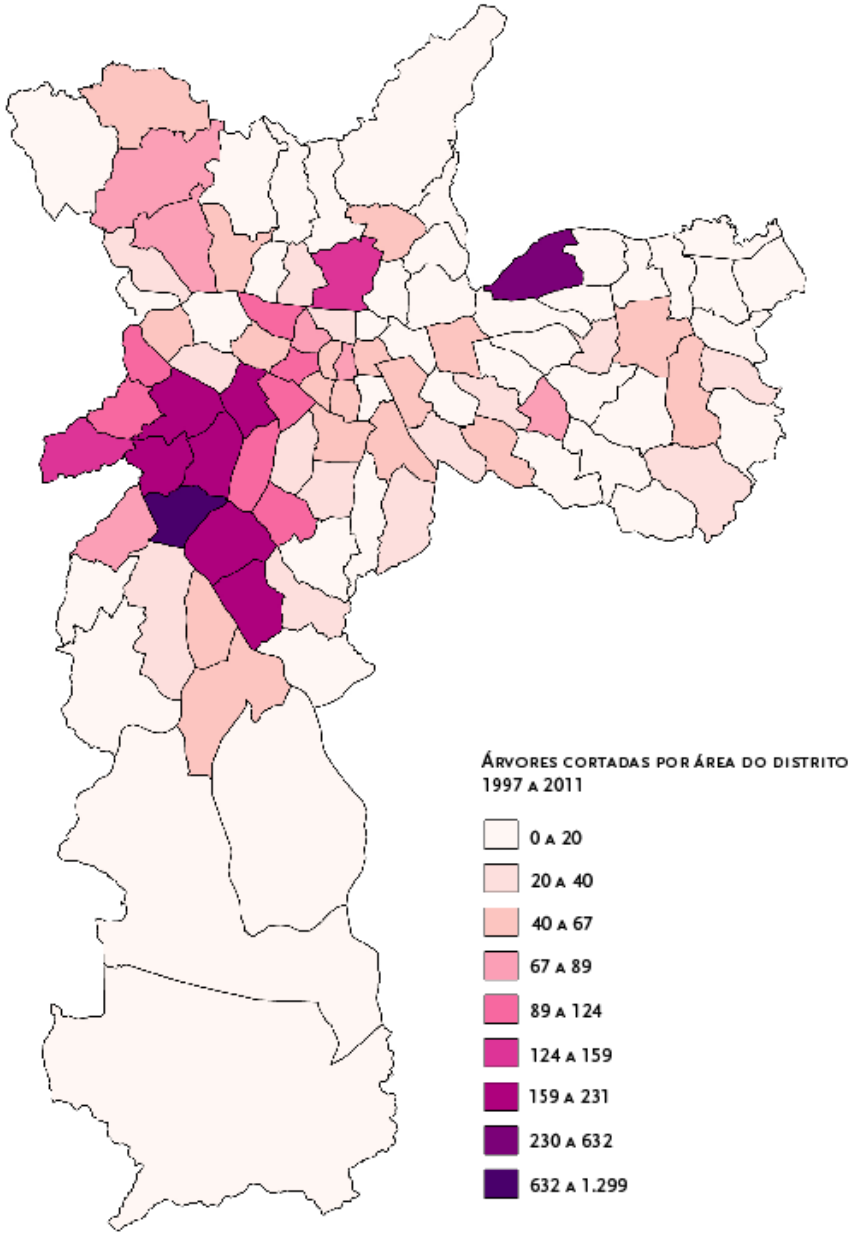
Converting into monetary values

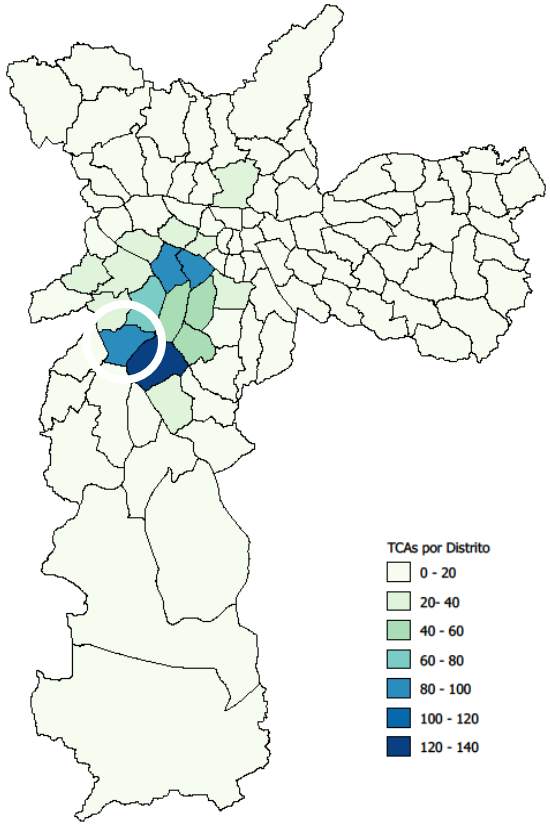
VALUE OF COMPENSATION = NUMBER OF TREES TO BE PLANTED x COST TO PLANT A TREE (£ 62,46)

Environmental Agency's value


TCAs por Distrito
0 - 20
20- 40
40 - 60
60 - 80
80 - 100
100 - 120
120 - 140


Cortes por Distrito
0 - 130
130 - 300
300 - 500
500 - 700
700 - 1400
1400 - 2000
2000 - 2800
2800 - 8100
8100 - 11905


Árvores cortadas por área do distrito
1997 a 2011
0 a 20
20 a 40
40 a 67
67 a 89
89 a 124
124 a 159
159 a 231
230 a 632
632 a 1.299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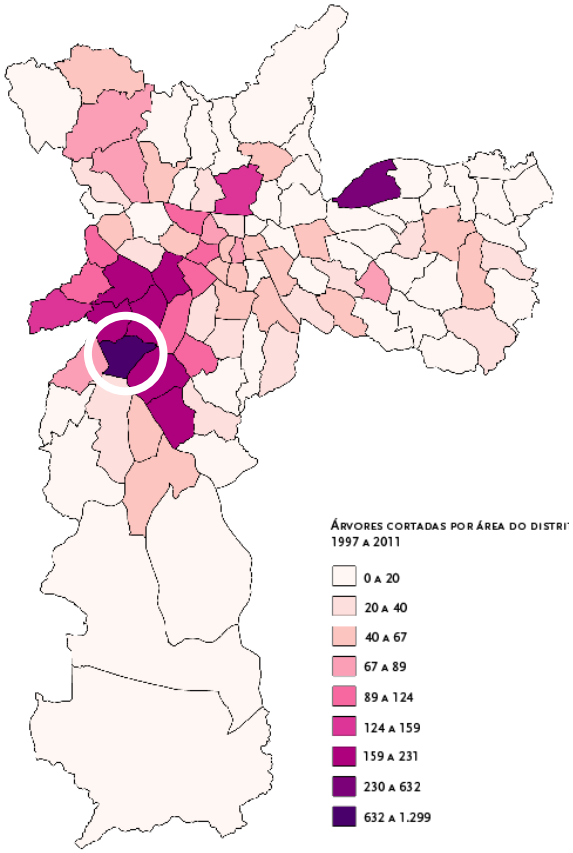
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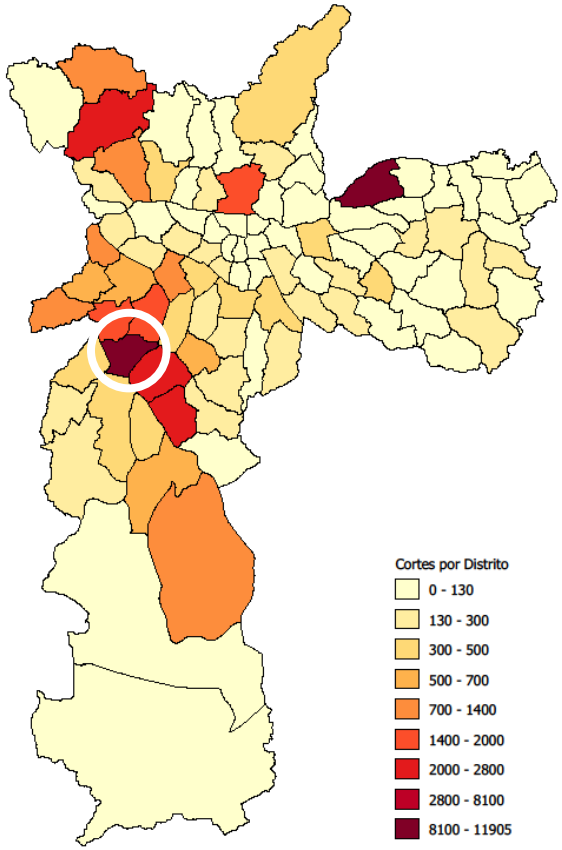
Cortes por Distrito
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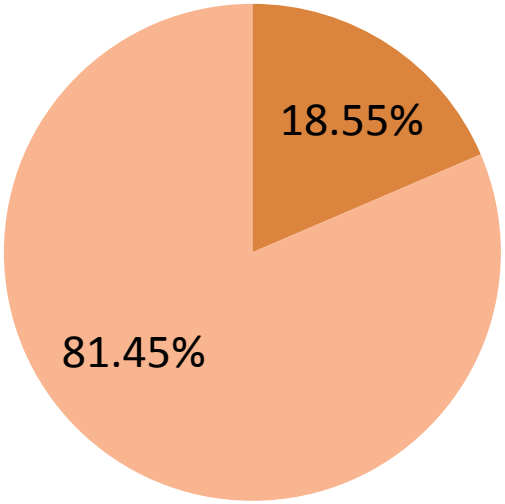
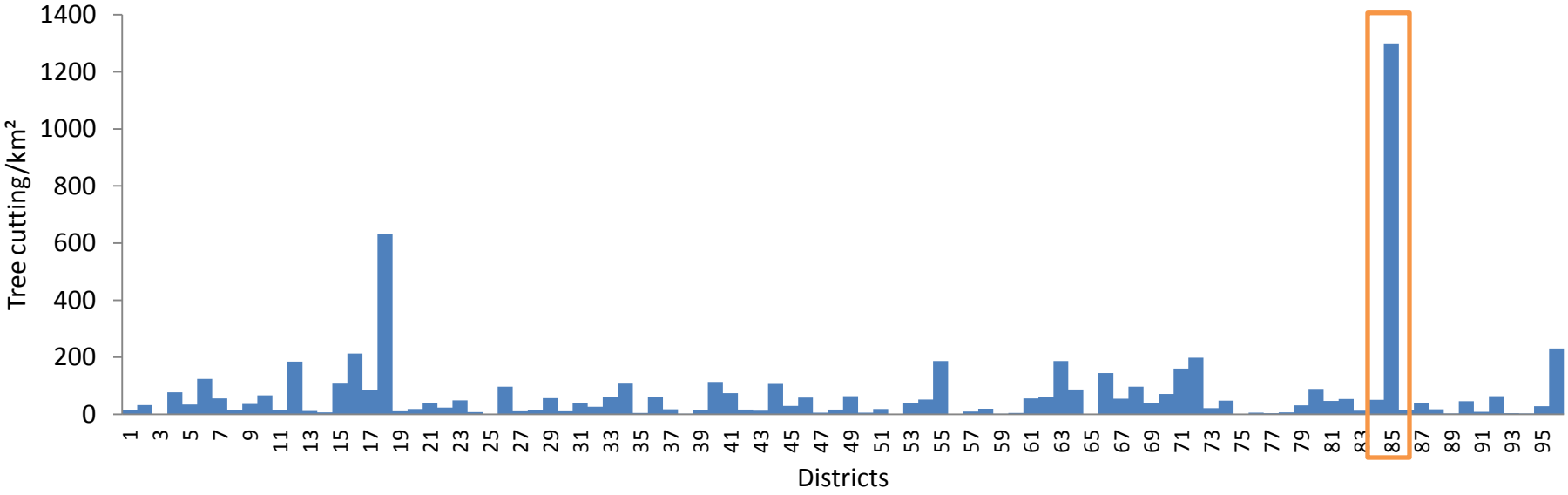
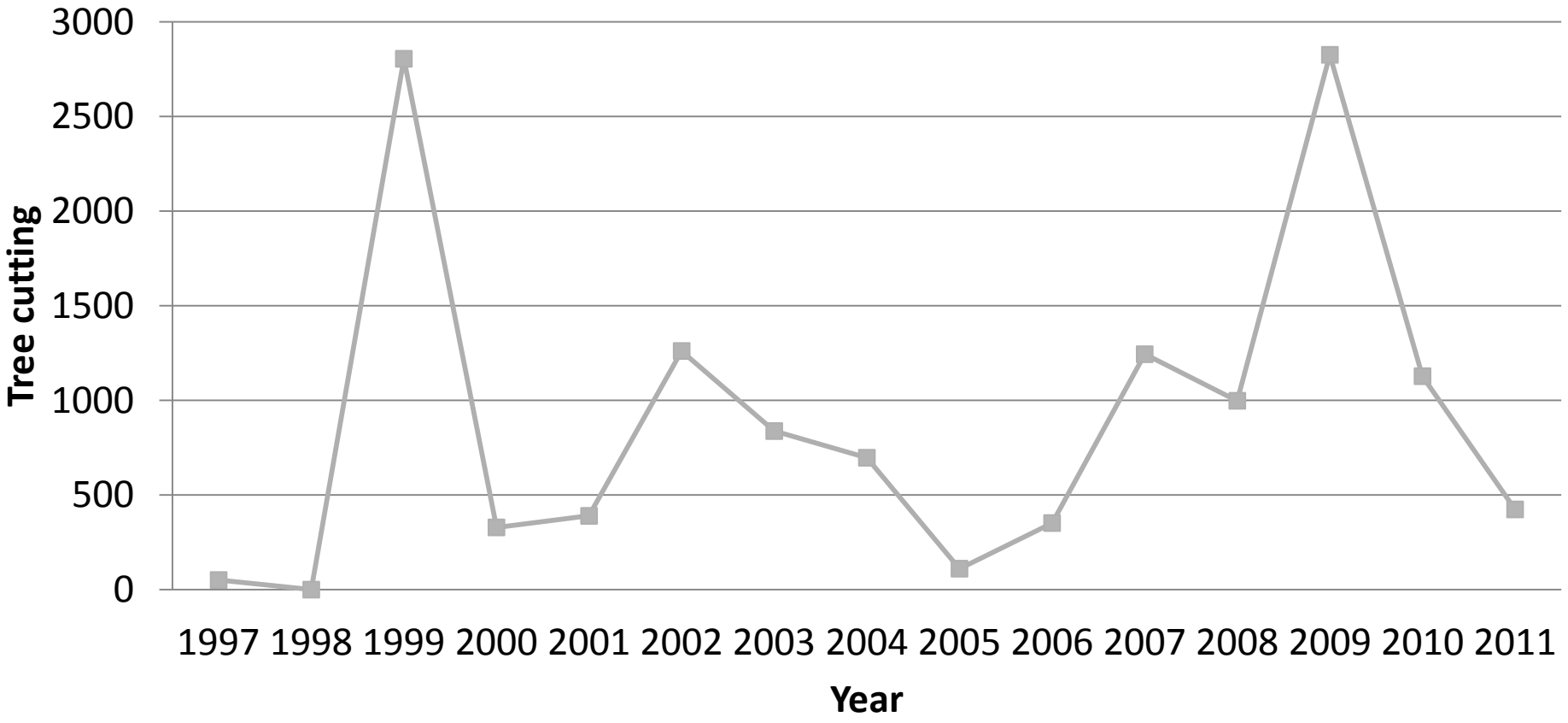
13.454

tree cutting





Tree cutting between 1997 - 2011



1999

2,805 - trees suppressed

102 - trees transplanted

2,907

2,686 - planting in site

100 - planting in streets

31,403 - seedling to municipal Nursery

34,192

2009

2,826 - trees suppressed

373 - trees transplanted

3,199

2,398 - planting in site

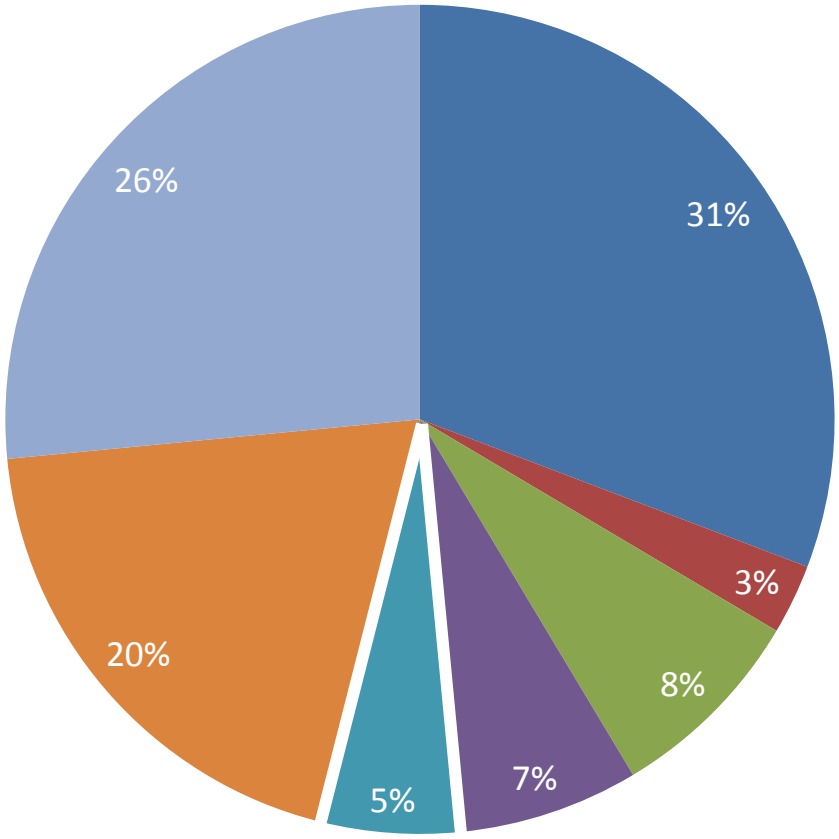
360 - planting in streets

3,967 - seedling to municipal Nursery

30,354 - trees converted

37,079

2009



- Pq. Natural da Cratera e Pq. Horto do Ipê
- Pq. Sto Dias
- Pq. Linear Diniz
- Pq. Altos da Baronesa
- Pq. Linear Itatapaiuna
- Pq. Guarapiranga
- Pq. Horto do Ipê

30,354 - trees converted into public works

IS THE

ENVIRONMETAL

COMPENSATION

JUST ANOTHER

FEE TO BE PAID ?

Concluding Remarks

Costs and benefits of urban forest are not being considered in its totality

The incorporation of natural processes in decision making remains to be established

It is necessary to establish better parameters for the conversion of trees to be planted into monetary values

Concluding Remarks

Increasing restrictions on tree removal and increasing the value of environmental compensation, decoupled from other measures, do not guarantee the preservation of vegetation

It seem not possible to establish an environmental compensation for an environmental damage not well defined

Thank you for your attention !

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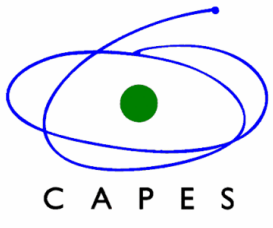

Image Reference

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